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ABSTRACT

The increase in investment in education in the Sudan has increased the number of graduates by about 12 percent each year in 1970-1975. The increase in output has not been matched by an equal increase in the absorption capacity of the labor market. Postsecondary education has been extremely costly, and the nation can hardly support the problem of educated unemployed. Another problem is the discordance between the type of higher education offered by the system and the kind of education and training needed by the labor market. The results of an extensive study of admissions policies and the employment of college graduates in the Sudan are presented, and statistical tables accompany the report. (Author/MSE)

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Higher education and employment in the Sudan

Bikas C. Sanyal and El Sammani A. Yacoub

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Preface

This case study on admission policies and the employment of graduates in the Sudan, by Bikas C. Sanyal and El-Sammani Abdullah Yacoub, is part of a research project of the IIEP which, under the direction of Mr. Sanyal, is designed to explore the relationship between the employment of graduates and the policies of admission into institutions of higher education in several countries. Similar case studies have been undertaken in Zambia and Tanzania, and their results will be published shortly.

These studies as well as other activities of the IIEP reflect the increasing concern in educational planning with the relationship between education and employment, and could contribute not only valuable results for the countries studied, but also more elaborate methodologies for studying similar problems in other countries.

The rapid expansion of education in the countries of the Third World has in some respects created as many problems as it has solved. At the higher levels of education, we often find a considerable discrepancy between the output of graduates in different specializations and the absorptive capacity of the labour market leading, in turn, to unemployment and underemployment of certain types of graduates and to scarcity of certain other types of graduates. In qualitative terms, questions are being raised as to whether the content and performance of systems of higher education are able to meet the changing needs of society including the new and changing methods of production in the labour market.

These discrepancies are badly in need of exploration, understanding and remedy. The high unit cost and opportunity cost in higher education, the particular political significance of universities and university students, and the responsibility of the higher education system in guiding and developing other levels of education make it imperative that a special effort be directed towards the analysis of both the qualitative and quantitative discrepancies that have developed in the higher education system and towards the exploration of possible means to correct them. The research project, of which this present case study is a part, attempts to contribute to this task.

We were particularly fortunate in being able to conduct this first case study of the project in a country as rich in economic potential as the

Sudan. It is my hope that those responsible for the further development and planning of the educational system in the Sudan will derive a great deal of benefit from the results of the study.

The absence of an up-to-date manpower survey and of accurate statistics of the labour force in the Sudan have compelled the authors to explore alternative patterns of the development of higher education based on alternative possibilities of the economy. The qualitative imbalances between higher education and employment are diagnosed by attitude surveys of three important but inter-related segments of the Sudanese society particularly closely related to the higher education system, namely, the students, the employed graduates, and the employers. To be sure, findings of surveys have their limitations, and the authors have been careful to emphasize the exploratory nature of the study. However, it appears that important methodological lessons have been learned from this attempt, and that a great deal of very valuable information has been gathered in the process. The importance of the study lies in that it tries to combine quantitative with qualitative aspects of the relationship between education and the world of work. It is this dual and more comprehensive approach to the development of educational systems which has come more and more to characterize educational planning.

In the preparation and implementation of this study, the IIEP has enjoyed the fullest co-operation of the Sudanese authorities and of various national specialists. It is one of the important principles of the work of the IIEP that its research projects are conducted in such a way as to ensure the fullest possible involvement of a country's officials and professionals. This study provides another fine example of this kind of co-operation, and the authors and I express our most sincere appreciation for it.

It is a pleasure to acknowledge the financial support which the Norwegian Agency for International Development (NORAD) has contributed to this project as part of the Norwegian contribution to the work of the IIEP.

Hans N. Weiler
Director, IIEP

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Thanks are also due to the Division of Higher Education of Unesco for inviting one of the authors to participate in the Higher Education Review Mission in the Sudan as a consultant for six weeks in 1974 and to the Data Processing Department of Unesco for analysing the questionnaires of the attitude surveys. We are grateful to the heads and senior officials of the Institutions of Higher Education and the Ministries for their co-operation in the study. We are also grateful to our colleagues at the IIEP who reviewed an earlier version of this study and suggested many improvements.

Although unable to acknowledge them individually, our thanks are due to all those who helped us to understand more closely the interactions between education and employment in the Sudan. The documents from which the present study has benefited are listed with the names of the authors in the bibliography.

The Publications Department deserves special mention for going through the different steps of the work. The authors are, however, responsible for the views expressed in this document and for the accuracy of the facts presented.

I. Aims and methodology of research

A. OBJECTIVES OF THE STUDY

During the last two decades, education has been given prominence throughout the developing world both as a basic human right and as one of the main prerequisites of economic progress. A large number of studies have appeared both in developed and developing countries highlighting the role of education in economic development. Investment in human beings has been considered a powerful factor of economic growth, accounting for a large unexplained part of it called the 'residual factor'. Salary differentials benefiting high-level manpower and educated persons seemed to support this concept. The high rates of return on educational investment were measured by cost-benefit analyses, both for individuals and for society as a whole. Although the calculations were approximate and sometimes even arbitrary, they almost invariably showed that in terms of productivity the rate of return on educational expenditures was as high as - if not higher than - the investments in other directions. As a result, many countries allocated an increasing proportion of their national resources to education. The view that education is a fundamental human right also heightened educational expansion. Even where educational plans were based on the study of manpower needs, the principal result was to promote educational expansion. The Democratic Republic of Sudan has not been any exception.

The increase in investment has increased the number of graduates in the Sudan by about 12 per cent each year during the last five years. The increase in output has not been matched by an equal increase in the absorptive capacity of the labour market. The gross national product (GNP) grew by 4 to 5 per cent and salaried employment grew by only about 2 per cent. The situation for post-secondary education has been worse since such education has been extremely costly; the nation could hardly support the problem of educated unemployed.

Some of the problems facing the educational decision-makers of the country are:

1. The quantitative imbalance in the educational output characterized by:

- more output in certain fields than can be employed and less output in certain other fields where it is required;
- unequal distribution of educational facilities among the different socio-economic groups and geographical regions;

2. A discordance between the type of higher education offered by the system and the kind of education and training needed by the labour market.

It is in this context that the International Institute for Educational Planning launched a research project on employment of graduates and its impact on the admission policy of the post-secondary education system of the Sudan, in collaboration with the National Council for Research of the Sudan. At a time when the proportion of national resources spent on higher education was approaching a limit, the gap between the aspirations of students, graduates, educators and employers, and achievement was widening, and the disparity in the distribution of higher education was increasing, it was imperative that the admission policy of the post-secondary education system of the Sudan be rationalised to match with the labour market needs and the needs of the Sudanese society.

The objectives of the study, therefore, are:

1. To identify the social and economic factors that have influenced the development of education in general and higher education, in particular, in the past.
2. To identify the inconsistencies, both quantitative and qualitative, that have developed in the past and suggest measures to rectify them.
3. To throw light on the main variables to be considered in formulating policies of intake to different disciplines and institutions.
4. To focus on the factors which intervene in the implementation of such policies and suggest some ways to minimize the effects of these factors.
5. Finally, to develop an information system to be used by the national policy-makers, the university administrators, potential employers, and the students, for decision-making.

The above objectives imply that the analysis has to reconcile the national plan for the higher education system with the plans of the individuals. This means that an analysis of the quantitative aspects is not enough. The investigation has to consider both qualitative aspects such as expectations of students, graduates and employers, content and structure of the higher education system of the country, and quantitative aspects such as manpower needs, trends of output and therefore intake, structure of the labour force, etc.

The tasks involved in the investigation may be listed as follows:

(a) Analysis of the socio-economic framework of the country and the pattern of development of education in general and higher education in particular.
(b) Analysis of the demand of the economy for skills and supply from the higher education system in quantitative terms by types of skill.
(c) Analysis of substitution between occupation and education.

(d) Analysis of expectations of the students for different kinds of higher education and the reasons for the differences in popularity among different fields of study, the availability of career guidance facilities and their effects on influencing the students' aspirations.

(e) Analysis of expectations of the employers in respect of their job requirements, their promotion and recruitment practices, job description mechanism, and the salary structure, and expectations of the employed graduates in respect of the higher education system and jobs.

(f) Establishing an information system for improved interaction between the higher education system and the labour market for continuous adjustment in the development of higher education both quantitatively and qualitatively.

B. METHODOLOGY OF THE RESEARCH

The methodology of the research will be discussed with reference to the framework of the study, data needs, data collection and processing, and reliability and validity of the results in the following sections.

(i) Framework of the study

Analysis of the socio-economic framework of the country is necessary in order to identify the sectors which play an important role in the economy. In this way the higher education system may promote such roles by supplying necessary human resources through an analysis of the structure of the labour force. Such analysis also helps us to identify the bottlenecks for economic development, if any, created by the higher education system. The analysis of the level of saving and the gross fixed capital formation (which are the indicators of economic health and influence the absorptive capacity of the labour market) provides us with useful information for planning the pattern of the development of higher education and therefore the policy of intake to different specialisations. The problems of employment, underemployment and unemployment are also diagnosed from the socio-economic analysis of the country.

The present state of the higher education system depends largely on the past development of education in general and higher education in particular, so an analysis of the development of education becomes an imperative step in identifying the reasons for imbalances, if any, in the present education system. This often gives important indications as to methods of rectification. The growth of enrolment at different levels and types of education, and their budget, provide crude but useful indicators for measuring the degree of balance in the development. Distribution of enrolment by regions and social groups is another useful analysis in identifying disparity in the distribution of educational opportunity. The distribution of students in institutions with different types of control furnish us with important indications in respect of the degree of control that can be applied to make any plan implementable. Information related to costs of higher education by institution and specialisation is also necessary to formulate the future development policy.

The analysis of the demand of the labour market for skills and the supply is the most difficult task, especially in the Sudan where manpower projections are not available and accurate statistics are limited. Projection of manpower requirement is beyond the scope of our study. The methodology that we follow is crude but provides the basis for the selection of vectors of development for different specialisations in higher education. The choice of a vector is determined by the following criteria. (1) the waiting period of the graduates before employment provided by a sample survey, (2) the estimates of unemployed graduates or existing vacancies provided by the Department of Labour statistics, (3) some estimates of the growth rate of the economy, (4) the capacity to control and/or expand an institution offering courses in particular specialisations, and (5) the educational flow rates. For each specialisation we choose several alternatives based on the above factors. The important aspect of this methodology is that we start with intelligent guesses based on whatever quantitative indicator is available and then make corrections on an iterative basis as more information on the above five factors becomes available. Factors (1) to (3) indicate the needs of the economy for each kind of specialisation. For the growth of economic sectors, several alternatives can be used: First, the past trend of the growth; secondly, estimates supplied by the employers obtained through sample surveys and personal interviews; and thirdly, indications on the priority of different economic sectors in the immediate future supplied by the government officials.

As mentioned before, our methodology attempts to consider the expectations of individuals and groups in formulating policy of intake for the higher education system. The rationale for this consideration is that although the development of higher education should be geared to the economic needs and therefore should take into account the expectations of the employers, indifference towards the expectations of the students and the graduates causes isolation of the system from its two important components, i. e. the students and the graduates.

It becomes necessary to identify the factors that lead to the pursuit of higher education by a student. These factors may be used for policy formulation to promote or control higher education. If, for example, it turns out that lack of satisfactory employment possibility with second-level education is an important reason for the pursuit of higher education then perhaps demand for higher education cannot be reduced as long as opportunities for jobs of the second-level graduates are not increased. Before 'bursary incentive' is introduced as a policy to promote the growth of a particular kind of education required by the economy, it is preferable to examine if 'bursary incentive' has any influence at all on the choice of an educational career by a student. It is also useful to examine the role of the socio-economic background of a student on the preference for an educational career and the factors that bar him in selecting the preferred field. If, for example, a student belonging to a particular social group cannot pursue an educational career of his choice for financial reasons, attempts can be made to reduce such difficulties especially if the social group is economically depressed and if the educational field is important to meet economic needs. It is often observed that students' pursuit of a field of study does not mean his being permanently employed in that field. It would be interesting to note the factors that are responsible for such behaviour.

The role of career guidance in the choice of a field of study is also another interesting aspect of investigation. In most developing countries such facilities for higher education exist to only a limited extent. But in order to channel the students to fields of study needed for economic development, career guidance is an important mechanism. The degree of availability of such guidance, the methods and their usefulness should therefore be known if the planning of higher education has to incorporate the planning of career guidance. The information in respect of employment opportunities should also be furnished to the students prior to their graduation, in order to reduce uncertainties about their future. Information in respect of the degree of availability of such information, their reliability and methods of dissemination of such information can do much to reduce the discontent among the students. If the factors that discourage the students in accepting a job in the rural areas can be identified, possible measures can probably be taken to encourage the graduates to accept a job in rural areas when it becomes necessary. In the choice of a job, several factors intervene, namely the nature of the job itself, career opportunities, income, security, etc. The relative importance of such factors can provide a useful guide to the employers in attracting suitable candidates for their jobs.

The methods of recruitment used by the employers deserve critical investigation to find the relative importance of different methods according to their own criteria and to inform the potential employees about them, and to form the basis for the development of a better recruitment mechanism for the employers themselves. The criteria for selection of candidates should be investigated as well. It would also be useful to note the employers' own attitudes towards the performance of the higher education system against their own requirements and the ways in which a better relationship could be developed between the employers and the higher education authorities.

The traditional manpower forecasts have not been able to take into account any of the above-mentioned non-quantitative aspects of the higher education system and the labour market. Intake policies based on simple quantitative forecasts of needs cannot succeed in implementation if the qualitative and attitudinal aspects of individuals and groups are ignored.

(ii) Data needs

The framework of the study discussed above calls for certain specific kinds of data. For the analysis of some of the above-mentioned characteristics, published documents are available. The economic variables, namely the level of saving, the gross fixed capital information, and the economic growth by sectors, are available from the documents cited in the bibliography (e. g. the Economic Survey, the Five-Year Plans, etc.). The characteristics of the educational development in the past are also available from the same type of source (e. g. the Educational Statistics, the annual reports of institutions, etc.). With the information collected from these sources, personal interviews with the responsible individuals and groups become necessary to clarify the peculiarities, if any, of the past behaviour and to develop some ideas about the future pattern of the economic and educational development, especially to identify the directions in which the national authorities want to move in the near future. The conclusions derived from the documentation and the discussions provide us with the alternative patterns of quantitative development of the different fields of study in the higher education system.

Some of the economic characteristics and a large number of educational characteristics are not available in published documents in the Sudan and discussions with individuals would be extremely time-consuming to collect information on those characteristics. For example, we have already mentioned the waiting period of a graduate for a job as an indicator for the degree of employability of the graduates with different specialisations. This is an economic characteristic indicating the absorptive capacity of the labour market for a graduate. This type of information is not available in published documents. Similarly, the factors that influence the choice of higher education by a student and the host of others are not available in published documents in the Sudan. So the use of questionnaires becomes necessary to collect such information and three types of questionnaires are prepared: one for the students of the post-secondary institutions of the Sudan, one for the graduates of those institutions, and one for the employers. These questionnaires are designed in such a way that the items of information on the economic and educational characteristics not available from published documents can be available and can be analysed statistically.

(iii) The questionnaires

The list of the variables and types of information collected for the students, graduates and employers are given in the following Tables 1, 2 and 2(a). The questionnaires are given in Appendixes II, III and IV.

Most of the questions were closed to facilitate analysis. Some of them were meant for multiple responses and some for single response only. The reasons for including questions of multiple-response-type

Table 1. List of variables, types of information collected with references to the questionnaire for the students

Variables	Types of information	Reference to the questionnaire in Appendix II, Serial No. of questions
1. Socio-economic background	Sex, age, marital status, nationality, region of home, guardian's occupation and income.	7, 8, 5, 6, 10, 9, 1, 2, 3 and 4 of the socio-economic background section of the questionnaire.
2. Educational status	Secondary school attended, type of certificate, year of graduation, desired educational career, year of study, reasons for undertaking higher education, reasons for change in the field of study - if any, sources of finance, adequacy of the secondary education, choice of the present faculty, degree of satisfaction in the present educational career.	1, 2, 3, 4, 5, 6 and 10, 7 and 8 of the educational background of the questionnaire.
3. Expectation about employment	Present employment, if any; estimated earning if not in educational institution today, reasons for continuing in the field of study if intending to be employed in a field other than the present field of study, dependence of the choice of career on the success in present studies, expected employment sector, conditions for accepting a job in rural areas, importance of factors in the choice of an employment, expected annual earning at different levels of working life.	9, 14, 12, 13 of the educational background section, 6, 7, 8, 9, 10 and 11 of the career information section.
4. The role of career guidance in the choice of higher education	Sources of information, their adequacy.	1 and 2 of the career information section.
5. Role of employment guidance	Desirability of the involvement of educational institutions in providing such guidance, their operational mechanism, means of getting better knowledge about jobs.	3, 4 and 5 of the career information section.

Table 2. List of variables, types of information collected with references to the questionnaire for graduates

Variables	Types of information	Reference to the questionnaire in Appendix III, Serial No. of questions
1. Socio-economic background	Sex, age, region of home, present home, and father's occupation.	4, 1, 2 and 3 of Section IV of the questionnaire and 9 of Section II.
2. Educational background	Reasons for pursuing higher education, reasons for change in the field of study, if any; sources of finance for higher education, diplomas obtained, specialisation and present occupation, degree of relevance of educational background with the job.	7, 4, 8 of Section II; 1 of Section I; 10, 11 and 12 of Section II.
3. Employment status	Methods of getting first employment, waiting period to get first employment, nature of present employment, reasons for change - if any - in employment, importance of different factors to make a job satisfactory, income at first employment and present income.	5, 13, 10, 12, 14, 15, 16 of Section II of the questionnaire.

Table 2a. List of variables, and types of information collected with reference to the questionnaire for the employers

Variables	Types of information	Reference to the questionnaire in Appendix IV, Serial No. of questions
1. Background of the employer	Date of establishment, type of control, size, types of production or services.	2, 3, 4, 5, 6 and 7 of Section I
2. Employment characteristics	Methods of recruitment, criteria for selection, desirability of and difficulties in having job description mechanism.	1, 2 and 3 of Section II.
3. Relation between the higher education sector and the labour market	Degree of correlation between academic performance and job performance, organisational mechanism of in-service training - if any, provision for accepting students on 'sandwich' courses, methods of co-operation with the higher education institutions in the formulation and implementation of their programmes, expected need for types of skills to be supplied by the institutions.	1, 2, 7, 3, 4, 5, 6 and 8 of Section III.

were the basic nature of the question itself. For example, a student might have used more than one source of career information to choose his educational career. So the question has to allow more than one answer (question 1, Section III, student questionnaire). The objective of setting such a question is to know what types of career information are used most frequently by students of different socio-economic and educational background.

The questionnaires were tried first among a group of employees with different levels of education, and heads of different departments of the government, to adapt them to the situation of the Sudan. Formal pre-testing among different groups of respondents was not possible due to lack of time and other resources.

(iv) The sampling method

The sample of students was drawn according to the stratified random sampling method, and stratified by all post-secondary institutions of the Sudan, with the exception of the University of Cairo (Khartoum Branch) which was closed at the time of the survey because of internal disturbance.

The sample size was limited to 500 because of time and cost factors and was distributed proportionally among the 21 institutions of higher education. This gave us a sampling proportion of 5.4 per cent of the student population. For the University of Khartoum and the Islamic University, each faculty was considered separately as a sampling unit. All the student questionnaires were returned. The representativeness of the sample was checked on three criteria: sex, educational institution and province of birth. The sample represented closely the population distribution.

The sample of graduates was taken from the graduate population who had obtained their degree/diploma since 1968. People who have been on the labour market for a longer time may have a formal academic background which is not always relevant to their present job. On-the-job training would also reduce the effect of formal education in which we are interested.

The sample size for the graduates was fixed at 400. The sampling ratio was approximately 4.0 per cent of the total graduate population, as defined above. The method of sampling was stratified random sampling and stratified by employers: government departments, public sector corporations, institutions of education and private sector firms. Twenty-four questionnaires were not returned which made a non-return rate of 6 per cent.

Because of time and financial constraints, the sample size of the employers was fixed at 100. As there was no complete list of employers in the Sudan, we had to work out a basis of distribution of the questionnaires with the Department of Labour, the Chamber of Commerce and the Department of Education. It was decided that 70 per cent of the sample should be made up of public institutions and government departments, 20 per cent of public sector corporations (i. e. under semi-government control) and the rest of private sector employers. Only those employers were contacted who employed at least five post-secondary graduates so that the employers have a general idea about the functioning of the higher education system. The questionnaire was filled in by the official in the institution, firm, etc. who is most informed of the attitudes of graduates, their job performance and the problems of the institution in respect of employment and training needs.

The response rate in the case of employers was very poor: only 50 per cent. Repeated visits to the employers failed to increase this rate. The distribution of the sample by type of control was however close to the anticipated distribution (see the section on the distribution of the sample by type of control).

(v) Data collection

The surveys were administered by the National Council for Research in the Sudan. They were mailed first to the heads of the institutions for the students and to the employers for the graduates and the employers. A team of ten investigators followed this up with meetings with the heads of institutions and employers to explain the method of distribution and filling in of the questionnaires. The investigators visited the institutions and the employers personally to collect the questionnaires.

(vi) Validity and reliability of the data

The discussion of validity and reliability of the data has to be based on the objectives of the study. We did not intend to measure the relationship between the higher education sector and the labour market precisely. Neither did we want to actually determine the precise influence of one variable on the other in quantitative terms. Our aim was to obtain some indications in respect of the discrepancies in the responsiveness of the higher education system to the labour market needs and in the distribution of higher education and employment opportunities, and the direction in which the gap between the aspirations of the students, graduates and employers in terms of the performance of the higher education system was moving, so that action could be taken to reduce such discrepancies and gaps.

The data collected on attitudes by means of questionnaires should always be interpreted with caution. A sophisticated analysis based on imprecise information would be meaningless. For this reason we restricted our analysis to very simple bivariate cross-tabulation. Care has been taken, however, not to use responses where the percentage of respondents to a question was less than 90 per cent for any type of conclusion without checking them with additional evidence.

For example, it was observed that one out of three law graduates of our sample had to wait more than a year to find a job, and only one out of ten could find a job within a period of less than six months. The number of lawyers in our sample was only 11 however and this was too small to make such a conclusion valid. The information was then checked with statistics obtained from the Department of Labour. It was found that law graduates had, indeed, great difficulty in finding employment. Our objective in this particular case was to find the degree of employability of different types of graduates. Law graduates had, indeed, less chance of being employed than any other type of graduate.

The results of the survey on employers should also be interpreted carefully because of the small sample and the high rate of non-response to the questionnaire.

The information on the expected earnings of the students was rejected completely for any meaningful analysis after a preliminary check with standard salary structures demonstrated that they were not reliable.

(vii) Data processing

Under IIEP supervision, the analysis of the questionnaire was carried out on the computer at the Unesco Secretariat in Paris. Transfer of the data to the coding sheets was made at IIEP following the format required by the programme prepared for the desired analysis. Coding and punching were verified before the analysis was performed.

C. PRINCIPAL FINDINGS OF THE STUDY

The main findings of the study may be summarized as follows:

1. During the last decade, education in the Sudan has experienced unprecedented growth. Enrolment in primary schools has increased at an annual average rate of 10. 8 per cent, in intermediate and junior secondary schools at 11. 1 per cent, and in higher secondary schools at 12 per cent. The overall government education budget increased at an annual rate of 12. 4 per cent at current prices. Adjusted for the price increase, the increase in the budget has been much less than the increase in enrolment. Even with this rapid expansion, only 42. 3 per cent of the seven-year-olds have been admitted to the first grade of primary schools (see Chapter II).
2. Only one out of five children of the primary school-going age in the rural region went to school, as against two out of three children in the urban region. At the junior secondary level only 2. 6 per cent of rural children went to school as against 41. 8 per cent of urban children. Higher secondary education in the Sudan is all urban. Disparity among the provinces in respect of educational opportunities is markedly significant. The enrolment ratio at primary level varies from 62. 8 per cent to 4. 5 per cent, at junior secondary

level from 28.3 to 0.8 per cent, and at the higher secondary level from 20.9 to 0.2 per cent. The degree of participation between men and women is also significantly different. At the primary level, the male/female ratio is 2:1, at junior secondary level, it is 3:1, and at higher secondary level 4:1. (See Chapter II)

3. Opportunities for vocational training before the higher secondary level are very limited. There are only two such schools and these are not fully utilised. (See Chapter II)
4. Enrolment in higher education has increased at an annual average rate of 12 per cent during the last five years, with varying rates for different institutions. Some of them have in fact diminished in size. The ratio between art-based and science-based students is decreasing because of the actions taken by the University of Khartoum in its own admission policy, emphasizing more science-based intake, and by the government toward the admission policy for the Sudanese in the University of Cairo, by restricting the intake. The expansion in higher education has not taken account of the employability of the graduates, especially in the art-based fields. The slow rate of growth of the economy accompanied by decreasing gross domestic fixed capital formation and low level of saving and fast rate of growth of the graduates especially in the art-based fields are the main reasons for unemployment of graduates (see Chapters II and III). The establishment of the Unemployment Relief Fund for unemployed graduates has created social and administrative problems in addition to increasing the burden on the already strained government treasury.

In addition to the problem of employment of graduates, several other problems have also faced the country during this fast expansion in higher education, as follows:

(a) All but one of the institutions of higher education have been located in the three adjacent towns of Khartoum, Khartoum North and Omdurman, leaving the remainder of this vast country without any facilities for higher education.

(b) Disparity among provinces in respect of higher education has increased enormously. In the case of higher education, participation from the Northern province is at the highest rate followed by Khartoum province and Blue Nile. As in the lower levels of education, Bahr-el-Ghazal and Upper Nile in the Southern region have the lowest rate of participation in higher education. Equatoria, another province in the South, has a higher rate of participation than Red Sea and Darfur, the two provinces in the North.

(c) Opportunities for women's higher education have not increased at the same rate as for male students. At present, the Sudan has a female student population of about 12 per cent only of the total student population in the institutions of higher education.

(d) The distribution of admission between science-based professional and sub-professional fields has been unbalanced, especially in the field of health and agriculture. From 1956 until 1973, 752 medical and pharmacy degree-holders have been turned out as against only

569 diploma-holders. There is less than one technical assistant (e. g. nurse and/or public health officer) to one professional. This has resulted in inefficient utilisation of very scarce and costly manpower. In the case of agriculture, the situation is the same. Up until 1973 there were 788 agricultural professional degree-holders (agriculture and veterinary science) as against 858 agricultural diploma-holders (agriculture and forestry). The rapid expansion of technical education has resulted in inconsistencies on the qualitative side. The employers are not satisfied with the job performance of the technicians. Criticism has been levelled against the 'bookish' type of training they receive.

(e) The development of higher education has not taken into consideration the importance of post-graduate studies in the universities. The University of Khartoum, the only full-fledged national university, had on the rolls in 1973/74 only 304 post-graduate students out of a total of 6,663, i. e. only 4. 6 per cent. Most of them are in the humanistic fields.

(f) A large part of Sudanese education is under foreign control, as reflected in the number of students abroad for training (4,841 in 1973/74) and the number of Sudanese students in the University of Cairo, Khartoum Branch, and controlled by the Senate of the University of Cairo in Cairo. The advantages of the training abroad lie in the little visible cost to the government, and broadness of outlook and dynamism amongst the returnees. But disadvantages are also quite significant and are reflected in the problem of relevance of the studies to Sudanese needs, lack of available facilities in the country similar to those abroad, and the problem of social adjustment of the returnees. The problem of non-return does not exist for those who are sent abroad by the government. Statistics on loss due to non-return of those who go abroad on their own are not available.

(g) The location of all the institutions of higher education in the Sudan in three adjacent towns has obliged the government to provide for boarding facilities for most of the students. Higher education in the Sudan being practically free, cost per student to the government is extremely high. This does not apply to the students of the University of Cairo, which is entirely financed by the Arab Republic of Egypt. The disintegration of the Khartoum Polytechnic into several small institutes has increased the cost per student. Each Forest Rangers' College student costs more than four University of Khartoum students. The School of Hygiene costs more per student than the Faculty of Medicine of the University of Khartoum, which costs per student the same as the Khartoum Nursing College. Some of these institutes turn out graduates who are badly needed for the social and economic development of the country and expansion of these institutes could reduce cost per student. Provision of boarding facilities could also be controlled to reduce the burden on the government treasury.

(h) Organised sources of career guidance are very few in the Sudan, which has led to a substantial proportion of students pursuing higher education without being aware of the career possibilities. Parents, friends and relations are the main source of such information and guidance. The institutions of post-secondary education play a very insignificant role in this. Lack of career information is more common amongst children of peasants and unskilled labourers, and those belonging to the provinces of the South (see Table A. III in the Appendix).

Medical science is the most preferred profession among the students, followed by engineering (although the private rate of return is lower for this field than for some others). There is a good correspondence between the profession of the parent and the expected profession of the student. Female students tend to prefer social science, health science and teaching (see Table A. IV in the Appendix).

(i) About one in five students are not satisfied with their present field of studies and two in five feel that the secondary school curriculum is inadequate for the higher studies. The inadequacy is felt mostly by students from Kassala, Kordofan, Darfur and Bahr-el-Gazal.

5. It is possible that between 60 and 80 per cent of higher secondary graduates will find places in the country's institutions of higher education, depending upon the alternative chosen for the admission policy of the higher education system (see Chapter IV).

6. Since there is a surplus of art-based graduates and a general shortage of science-based graduates in the labour market, it is necessary to reduce the intake to art-based courses and increase the intake to science-based courses. An analysis of the implications of several alternative intake policies based on alternative assumptions shows that it would be possible to reduce the ratio in output of art-based and science-based graduates from 60:40 to 40:60 by 1980 if the low alternative for all art-based intake (with the high alternative only for the secretarial studies among the art-based intake) and the high alternative for science-based intake are accepted and followed, as recommended in the text. (See Chapter IV)

Under the existing circumstances, the ratio between sub-professional and professional output cannot be improved before 1980. Only serious efforts to establish new institutes for sub-professionals, accompanied by a changed salary structure and prospects, can change the situation. If such attempts are not made, the country will continue to face structural imbalance among the scientifically qualified manpower (see Chapter IV).

7. It will be possible to increase the output of science-based graduates to a maximum limit of 12.4 per cent per year between 1974 and 1980, and to decrease the output of art-based graduates to a maximum limit of 7.1 per cent per year during the same period (see Chapter IV).

8. About two-thirds of the students indicated that they wanted to pursue higher education because of the need for higher degrees for career reasons. About one-fifth of all the students, but about half of the female students, say that they continue higher education for its own sake. This may be one of the reasons for the latter's low participation in the labour force.
9. The most important source of information on employment for the employed graduates is the Department of Labour. Personal contacts do play a role in obtaining employment in the opinion of the employed graduates, although the employers do not agree. The institutions of higher education play an important role in finding employment for graduates in the agriculture and engineering fields. There is good correspondence between the professions of the graduates and those of their guardians (see Chapter VI).
10. The graduates with specialisation in agriculture, engineering and natural science obtained employment quickly, but those specialising in law had to wait the longest period of time.
11. There is very little substitution between specialisation and profession among the graduates in engineering, natural science, medicine, law, education, teacher training and commerce. Substitution ratio varies from zero in the case of law and medicine to 1:6 for natural science. This ratio is high in the case of graduates in humanities and arts. One out of three goes to non-liberal professions (see Chapter VI).
12. The main problem that the employers face in appointing an employee is the lack of coherence between the curriculum of the educational institution and the employers' needs. The situation is worsened by the fact that there is divergence between the training that the graduates actually have and what they are supposed to have. Moreover, the graduates who did well in their academic life are not necessarily as successful in their professional life. Only 37.25 per cent of the employers are of the opinion that there is a high correspondence between the educational performance and the job performance of employees. About 50 per cent of the employers believe that only a moderate correspondence exists between these two aspects for the graduates.
13. Even though a better performance in academic life does not ensure a better job performance, the most important criterion of recruitment is - ironically perhaps - the academic record of the candidates seeking the job. About 75 per cent of the employers consider the academic record as very important. The next important criterion is the performance of candidates when interviewed, with about 51 per cent of the employers emphasizing the importance of the interview when selecting employees. Aptitude tests and past experience in similar jobs are important factors, but letters of recommendation and physical appearance are not very significant as the criteria for recruitment.
14. As far as the media of recruitment are concerned, the employers depend mainly on the 'labour department', the 'institutional authorities',

and 'newspaper advertisements', of which the first is the most important.

15. In order to minimize the gap between the employers' needs and the nature of the training offered by the higher education institutions, most of the employers were willing to actively assist the institutes in developing curriculum, suggesting methods of instruction, evaluating training programmes and developing research projects relating to the employers' needs.

To be realistic however, one must admit that the higher educational institutes can hardly cater for all the special and characteristic requirements of all the industrial and commercial firms and concerns. The employers must therefore send their employees to specialised training courses to enable them to acquire the 'know-how' necessary for their respective firms. Nevertheless, the higher educational institutions may run some broad-spectrum special courses for industry/business, etc., to meet the general requirements of the labour market. About half of the employers surveyed were willing to have such special courses in the higher educational institutions.

About 60 per cent of the employers have in-service training facilities for their employees. The majority of the employers who do not have some training programmes also would like to have these in order to upgrade their personnel and to meet the special requirements of their firms. The employers would like the higher educational institutes to become more concerned about their requirements and to develop training courses for preparing the students for the needs of the labour market. The employers are ready to advance their co-operation in various respects, for example by sending personnel on training courses, participating in teaching programmes and by offering expert opinions as members of curriculum committees (see Chapter VI).

II. The socio-economic framework of the Sudan and the development of general education

SECTION I - THE SOCIO-ECONOMIC FRAMEWORK OF THE SUDAN

Before proceeding to the analysis of the educational system of the country we would like to deal in this section with its socio-economic conditions.

A. INTRODUCTION

The Sudan is the largest country in Africa with an area of about 2.5 million sq. kms. bordered by eight countries[1], with a coastline of some 750 kms. on the Red Sea and a population of less than 15 million[2] of which almost one-sixth is nomadic and half under 20 years of age. A large part of the country is desert, semi-desert or low rainfall Savannah woodland. The northern region has little rainfall to support agriculture. The central and southern regions have considerable scope for equatorial cultivation. Most of the country is flat, but there are a few mountains - the Marra range in the far-west and the Imatong mountains in the far-south rise to over 3,000 metres above sea level. The scant rainfall in most parts of the Sudan is compensated by the White Nile, which originates in Uganda, flows through the entire length of the country and the Blue Nile, which originates in Ethiopia and joins the White Nile in Khartoum, the capital. The area lying between the two Niles is one of the most productive areas of the country and has undergone development over the past few decades, particularly in the field of irrigated crop production.

Population and economic endeavour are concentrated along the Nile, particularly in the Kordofan and Blue Nile provinces. The preliminary estimate of the census shows that the population has grown from

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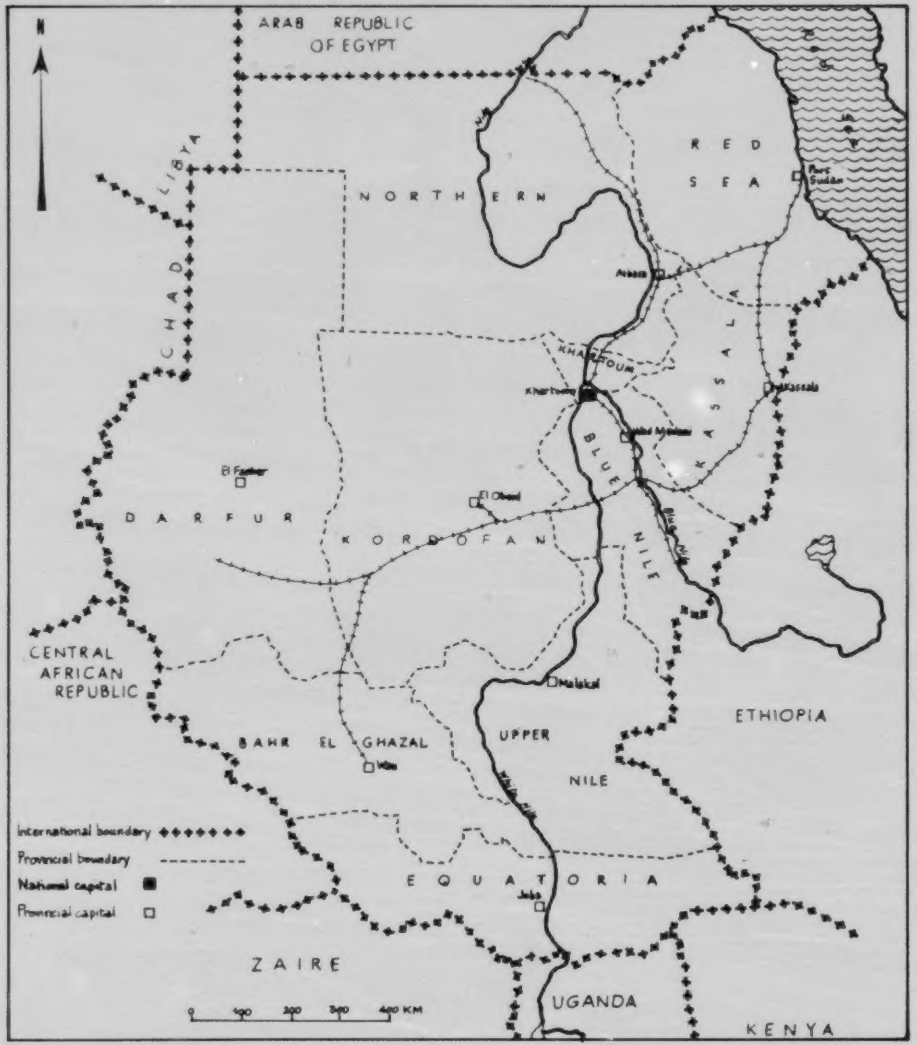
1. Central African Republic, Chad, Egypt, Ethiopia, Kenya, Libya, Uganda and Zaire.
2. Preliminary estimates of the 1973 census. At the time of writing this section, some adjustments were under way for nomadic population and migration of cotton-picking labour.

Map 1. Sudan, showing division into provinces


N
ARAB REPUBLIC OF EGYPT
LIBYA
CHAD
NORTHERN
RED SEA
Port Sudan
Atbara
KHARTOUM
Khartoum
KASSALA
Kassala
Wad Medani
BLUE NILE
El Fasher
El Obeid
DARFUR
KORDOFAN
CENTRAL AFRICAN REPUBLIC
Malakal
ETHIOPIA
UPPER NILE
BAHR EL GHAZAL
Wau
EQUATORIA
Juba
ZAIRE
UGANDA
KENYA
International boundary
Provincial boundary
National capital
Provincial capital
0
100
200
300
400 KM

10.3 million in 1955-56 to 14.1 million in 1973 - with a modest growth rate of about 2 per cent per year - during the last seventeen years. Kordofan and Blue Nile alone account for 42 per cent of the total population, the largest concentration being in the Blue Nile Province. The economically productive population in 1973 was estimated at 6.6 million. The economy is predominantly agricultural and the overwhelming majority of the people live in the rural areas. The urban population comprises about 10 per cent of the total, and about half of them live in the three towns: Khartoum, Omdurman and Khartoum North.

B. THE GROWTH OF THE ECONOMY

Lack of a reliable series of national accounts creates difficulties in estimating precisely the development of the country. The national accounts yearly compiled for the period 1966-69 were on a calendar year basis, whereas those compiled for 1969-70 and 1970-71 were established on a fiscal year basis to make the estimates according to the budget year, i.e. July to June. Many problems arose in the adjustments from the calendar to the fiscal year, which resulted in the decision to revert to the calendar year for later years. During the period 1966-68, the gross domestic product (GDP) at current factor cost grew at the rate of 7.4 per cent per year. However, inflation which has prevailed for many years has resulted in price increases averaging 5-7 per cent a year. In 1969, GDP at current factor cost actually declined by 4 per cent, owing to adverse weather affecting agricultural production. Adjusted for the population growth, it means that the available national product per head remained the same during the above period. During the period 1969-72 the economy experienced an estimated growth at the rate of 7.6 per cent per year.

The government policy appears to be responsible for this turning point in the history of the economic development of the Sudan. It appears that a similar pattern of growth will continue in the future.

However, the overall average represents a widely varying situation, depending on the sector of the economy in question and the particular year under consideration. In absolute terms, during the period 1962-70, the contribution of the agriculture sector has gone down at current factor cost prices at an average rate of 1 per cent per year, that of mining and quarrying, manufacturing and handicraft, commerce and hotels, transport and communications, finance and real estate, government and non-profit services have gone up altogether at an average annual rate of 7 per cent and that of other sectors has not registered much overall change in absolute terms (see Table 3). National income per capita has changed very little during the period from £S36.1 to £S37.7. Adjusted for price increases, per capita income has indeed decreased.

The most interesting feature of the sectoral contribution to GDP is the increase in the share of government services during the above period from £S31.1 million to £S84.5 million at an average annual rate of 13.3 per cent. No other sector, except mining, manufacturing and

Table 3. Gross domestic product by economic activity at factor cost 1962-1970/71 (£S. Million) at current prices

	1962	1963	1964	1965	1966	1967	1968	1969	1969/70	1970/71
1. (a) Agriculture	147.9	126.5	115.7	122.7	111.0	126.1	131.6	108.6	122.2	130.6
1. (b) Livestock, forestry & fishing	82.2	84.0	86.0	88.0	62.0	64.1	68.3	71.7	85.4	86.7
2. Mining and Quarrying	0.2	0.3	0.3	0.3	1.9	2.0	2.3	1.7	1.7	1.8
3. Manufacturing & handicraft	19.0	20.8	22.8	26.3	36.6	40.0	41.5	42.9	50.8	49.9
4. Elect. & water	15.7	16.0	16.3	16.6	16.6	16.3	16.7	16.3	16.5	16.5
5. Construction	23.9	29.0	29.0	22.5	23.9	21.7	24.3	22.3	23.3	22.3
6. Commerce & hotels etc.	34.3	46.0	58.0	65.0	89.6	96.3	108.0	90.3	54.4	55.1
7. Transport & communication	28.0	29.0	30.0	31.0	31.8	31.4	33.8	33.6	50.6	50.4
8. Finance & real estate etc.										
9. (a) Miscellaneous private services	2.7	2.7	2.7	2.7	15.6	17.2	16.1	3.9	3.4	3.1
(b) Government services	31.1	35.0	41.0	46.0	40.6	46.3	51.5	76.8	77.1	84.5
(c) Non-profit services	3.7	4.0	4.3	4.5	12.2	11.0	13.9	10.4	8.0	8.3
G.D.P. at factor cost	402.6	408.1	421.7	441.3	456.9	489.9	527.0	505.9	516.6	531.7
Indirect taxes (net)	43.8	46.0	45.1	45.6	40.6	46.4	56.2	79.2	86.0	105.9
GDP at market prices	446.4	454.1	466.8	486.9	497.5	536.3	583.2	585.1	602.6	637.6
Expenditure on GDP	456.2	464.1	476.8	496.9	497.6	536.3	583.2	585.1	602.6	637.6
GDP (value added)	446.4	454.1	466.8	486.9	497.5	536.3	583.2	585.1	602.6	637.6
National income	440.7	448.4	458.0	475.8	460.2	497.7	542.2	550.7	562.9	572.0

Source : National Income Statistics and supporting tables, Department of Statistics, Democratic Republic of Sudan, March 1973.

handicrafts, has registered such an increase. Non-productive as it is, this has in fact weakened the economy in the past. Reasons for this are, however, the problem of the southern region and government policy towards employing all post-secondary graduates despite the lack of suitable jobs.

C. CONDITIONS OF DEVELOPMENT AND ECONOMIC FEATURES OF THE COUNTRY

This section deals with the most important characteristics of the economy of the country. These are: (i) the role of the different economic activities, (ii) the level of saving, (iii) the structure of the labour force, (iv) most important of all, the problem of the South.

(i) The role of agriculture

The Sudan's economy is predominantly agricultural (including livestock, forestry and fishing) and its role is much bigger than its 40 per cent contribution to GDP. The bulk of the country's population (72 per cent) is engaged in agriculture and 98 per cent of exports originate in the agricultural sector. The principal exports are: cotton, oil seeds, vegetable oils, gum, oil cakes, livestock, hides and skins and, in years of good harvest, also sorghum (dura). The country is self-sufficient in its staple food-grain - sorghum. Table 4 illustrates the trend of production of the main agricultural products. Cotton, which is the main export commodity, increased its production from 310 thousand metric tons to 565 thousand metric tons during 1963-72. This is an increase of about 7 per cent per year. Production of gum arabic, which is the next important export, actually decreased from 39.3 thousand metric tons in 1963-64 to 21.2 thousand metric tons in 1972-73, a decrease of about 7 per cent per year. The main reasons for this decrease were the drought, the desert creep and the substitution of gum by other cash crops. The value of exports has been increasing at about 8.3 per cent per year and the value of imports at a rate of 4.9 per cent, implying a favourable trend in the balance of trade. From the beginning of the decade until 1972, there has always been a deficit in the overall foreign trade, which has been decreasing- the first substantial decrease was registered in the year 1965 (see Table 5). The price index of imports increased from 98.6 (1953 = 100) in 1963 to 138.2 in 1972, and that of exports increased from 99.2 to 130.9 during the same period. This shows that the price index of imports has increased slightly faster than that of exports.

The country's agricultural resources are not yet well utilised. Out of the country's land surface of 250 million hectares, 80 million hectares can be used for agricultural production but only 31 million hectares are at present being used - 7 million as arable land and the rest for grazing purposes. The area under cultivation is, however, increasing at an average rate of 3.7 per cent per year and the

Table 4. Output of main crops - 1963/64 - 1972/73 (in '000 metric tons)

Year	Cotton	Ground-nuts	Se-same	Dura	Duhon	Maize	Wheat	Castor	Gum Arabic
1963/64	310	289	174	1 348	373	24	37	7	39.3
1964/65	442	280	184	1 138	354	27	56	6	49.1
1965/66	449	305	160	1 095	253	12	69	10	50.4
1966/67	537	314	134	850	252	11	78	19	45.0
1967/68	527	297	187	1 980	369	18	88	21	61.5
1968/69	656	164	154	870	267	16	128	11	45.5
1969/70	682	408	175	1 494	384	36	115	23	39.3
1970/71	727	338	297	1 535	439	41	162	10	44.3
1971/72 (1)	655	394	278	2 079	325	13	156	14	29.9
1972/73 (2)	565	487	338	1 326	353	8	164	16.6	21.2

(1) Revised figures

(2) Tentative

Source: The National Planning Commission, Economic Survey, 1972, Khartoum, 1973.

Table 5. Foreign Trade 1963-1972

Year	Exports (1)	Imports (2)	Surplus (+) or Deficit (-)
1963	78.7	99.2	- 20.5
1964	68.6	95.5	- 26.9
1965	67.9	72.2	- 4.3
1966	70.7	77.4	- 6.7
1967	74.1	81.1	- 0.2
1968	81.1	89.7	- 8.6
1969	86.2	92.5	- 6.3
1970	102.2	108.3	- 6.1
1971	115.2	123.7	- 9.3
1972	125.5	123.1	+ 2.4

(1) Domestic Exports and re-exports, value (FOB) in millions of Sudanese pounds
(2) Value (CIF) in millions of Sudanese pounds

Source : National Planning Commission, ibid.

utilisation of Nile water has already increased three-fold. While the development strategy is centering on increasing agricultural acreage, it appears possible to improve productivity in the existing farmed areas at relatively low cost. The production of crops can be stepped up through the use of good quality seed, increased technical know-how, production credit and higher farm-gate prices. Increased installation of ginning capacity could shorten the ginning season of the Gezira scheme and reduce risk of crop damage. Groundnuts could be introduced over a large part of the 200,000 hectares currently under irrigation for sorghum and the production of this crop could be expanded in rainfed areas. Mechanical farming could reduce the seasonal shortage of labour for cotton picking. Sudan's livestock potential is largely untapped. Its total livestock population is 35 million with 13 million cattle, 12 million sheep and the rest goats and camels. With increased animal care through the development of veterinary science this livestock can be developed. Export-oriented projects already under way may increase foreign earnings in the near future, through the increased export of meat and fish. The output of fisheries is expected to increase from 16,000 tons per year to 30,000 tons per year in the next few years. The yield of most agricultural crops and livestock in the Sudan at present is below international standards.

Lack of research on agricultural crops, except for cotton, and shortage of trained personnel are some of the main obstacles for a more rapid transformation of agricultural development in the Sudan. There are only 146 extension agents to help about one million farmers. Extension services for livestock are very few and even fewer for forestry. The country's agricultural sector has only one-fifth of the qualified staff needed.

(ii) Mining and quarrying

The country's mineral resources are not yet well studied. This is due mainly to (i) lack of qualified staff (at present, there are only 70 geologists for the whole country), and (ii) poor means of communication. The contribution of this sector to GDP at current factor cost prices increased, however, from almost none, £S0. 3 million in 1963 to £S2. 3 million in 1968, and went down to £S1. 7 million in 1969, due to the closure of the Suez Canal, which made exploitation of the iron ore usually exported to Yugoslavia unprofitable. Due to the problem of transportation to Port Sudan, the production of chromite is also kept at a very low level, although the reserve is quite substantial with an estimated 1. 5 million tons. The country has sufficient reserves in iron ore and copper - the latter requiring processing before shipment because of low copper content. Preliminary investigations show an estimated reserve of 30 million tons of gypsum in the Khor Eit locality on the Red Sea.

Table 6. Industrial production 1965/66 - 1970/71

Unit	1965/66	1966/67	1967/68	1968/69	1969/70	1970/71
Cement '000 tons	73.2	101.1	128.7	140.7	194.1	227.2
Flour "	44.8	39.9	48.8	51.5	111.6	176.0
Sugar "	11.3	85.9	93.2	90.8	86.2	72.5
Soap (toilet) "	1.7	1.2	1.3	1.3	2.0	2.2
Soap (other) "	17.1	17.6	17.1	18.0	21.7	25.7
Wine million litres	1.3	1.7	1.6	1.5	2.1	3.4
Beer "	7.5	7.8	7.4	7.2	4.7	7.0
Cigarettes '000 kilos	535	647	661	532	601	675
Matches million	3130	3854	3952	3875	4890	4412
Shoes million pairs	7.2	8.2	9.5	10.7	2.7	12.0

Source : Ministry of Industry and Mining.

Training needs are evident in the exploration and exploitation of mineral resources of the country. The re-opening of the Suez Canal and international rationalisation of pricing policy for raw materials will make exploitation of a substantial part of the resources economically viable.

(iii) Manufacturing and handicrafts

The manufacturing and handicraft sector of the economy contributes more than 9 per cent to the GDP, absorbs about 4.5 per cent of the labour force and has almost no foreign earnings. The contribution to GDP has increased from 5.1 per cent in 1963 to 9.4 per cent in 1970-71. Thirty-two per cent of the contribution is from handicrafts. Up to 1960, manufacturing had been undertaken only by private interests. The first government-owned manufacturing operation, a tannery, went into production in 1961, followed by a large sugar mill in 1962 and a cardboard factory in 1963. The nationalisation measures of 1970 expanded public ownership in the industrial sector with the Industrial Production Corporation as the controlling holding company of eight sub-corporations covering 46 enterprises.

Industrial statistics are inadequate for an accurate analysis of the overall trend of output. The only up-to-date data available are those for products subject to excise taxes and produced within the public sector. They show on the whole a rising level of output for most items. The only exceptions are items which have been affected by shortages of raw materials (sugar), competition by imports from bilateral sources (shoes), or by a decline in demand resulting from an increase in excise duties (cigarettes and beer). It is observed that cement production has increased at an average annual rate of 25 per cent during 1965-70, flour by 31 per cent, sugar by 45 per cent and shoes by 10 per cent. (see Table 6)

The present policy of encouraging foreign investment in the country, thoughtfully implemented, may increase industrial production faster in the near future.

(iv) Transport

It has already been mentioned that one of the reasons why the Sudan's economy is not developing as fast as desired is the problem of communication in this vast land. The transport system consists only of 4, 757 kms. of single track railways, 3, 500 route kms. of river services and about 18, 000 kms. of roads and tracks. Only about 330 kms. of the roads are asphalted and about 5, 000 kms. are built to gravel standards. Many of the gravel roads and all the remaining tracks are virtually impassable during the rainy season. There are 20 all-weather airfields and a single seaport at Port Sudan. The railway is the country's most important means of transport. But nearly 60 per cent of freight traffic on the Sudan Railways moves on only 17 per cent of the railway's total network - the 787 kms. mainline between Port Sudan and Khartoum. The Western extension railway to Nyala and the Southern extension to Wau which account for 25 per cent of the route kms. carry only about 8 per cent of total ton-kms. of freight. The solution to the problem of the South will increase the freight traffic to Wau in the near future. The Sudan Railways are operating well below potential capacity at the moment, and operations are not meeting current requirements. In the near future, the railway is likely to remain the principal means of transport in the Sudan and increasing its efficiency is critical to the economy. The infrastructure is adequate to carry the traffic foreseen in the near future with equipment added and maintained as necessary to meet requirements, although maintenance is a problem because of the lack of technicians in the Sudan at the moment.

The Sudan's maritime trade was severely affected by the closure of the Suez Canal. The Cape surcharge on freight rates is 50 per cent on traffic to Western European ports and 75 per cent to Mediterranean ports. The number of ships calling at Port Sudan dropped from 1, 253 in 1967 to 761 in 1972, although freight handling increased from 2, 358 thousand tons to 2, 822 thousand tons during the same period. The port has been operating efficiently, but has almost reached its capacity limit and with the re-opening of the Suez Canal, the capacity of Port Sudan needs to be increased.

For full integration between the South and the North of Sudan, one has to foresee the need for the development of river transport services, to use the potential of the White Nile, in addition to air traffic, which is at present the main all-weather communication means. The establishment of the River Transport Corporation and the proposed Junslee Canal to avoid the large swamp separating the South from the North is a movement in the right direction.

(v) Commerce and hotels

This sector accounted for about 10 per cent of GDP in 1971, and employs about 4 per cent of the labour force. Twenty-seven commercial enterprises were consolidated in 1970 into a holding company - the General Trading Corporation - and 14 specialized cotton-exporting companies were nationalized and grouped into fewer firms under the jurisdiction of the newly formed Sudan Cotton Marketing Corporation, under the public sector. This sector showed an average annual growth rate of 6 per cent during 1962-70, and contributed on average 19 per cent of the GDP during 1966-69. This reduced suddenly to about 10 per cent in 1970-71, due probably to the nationalization measures. The present economic policy of the government is expected to increase this sector's share in the near future.

(vi) Government services

Government services which accounted for only about 10 per cent of the GDP up to 1968 suddenly increased its share to 15 per cent in 1969, and has remained at that level since then. This sector employs about 16 per cent of the labour force. It is estimated that total employment in central and local government is about 120, 000. Including the other public enterprises, the public sector is the largest employer of the country. The government's past policy of providing employment for every university graduate, coupled with the depressed level of activities in the private sector, made the government the residual employer. The problem of the South also put a heavy burden on this sector of the economy. That problem having been solved, much of the resources may now be diverted to development activities.

(vii) Level of saving

One of the striking characteristics of the Sudan's economy is that the rate of saving was very low during 1966-68, varying between 3. 75 per cent and 4. 77 per cent. It went up to 11. 8 per cent in 1969-70, but went down again in 1970-71 (see Tables 8 and 9). This demonstrates that, in the past, the economy had failed to set aside adequate resources from current income to generate a growth commensurate with the economic welfare aspirations of the community. Government consumption has increased at an average annual rate of 10 per cent during the period 1968-71, whereas private consumption has decreased

Table 7. Trend of the percentage distribution of contribution to GDP by economic activity at factor cost

		1962	1963	1964	1965	1966	1967	1968	1969	1969/70	1970/71
1.	(a) Agriculture	36.74	31.00	27.44	27.80	24.29	25.74	24.97	21.47	23.65	24.56
	(b) Livestock, forestry & fishing	20.42	20.58	20.39	19.94	13.57	13.08	12.96	14.17	16.53	16.31
2.	Mining and Quarrying	0.00	0.00	0.00	0.00	0.42	0.41	0.44	0.34	0.33	0.34
3.	Manufacturing & handicraft	4.72	5.10	5.41	5.96	8.01	8.16	7.87	8.48	9.83	9.38
4.	Electr. & water	3.90	3.92	3.87	3.76	3.63	3.33	3.17	3.22	3.19	3.10
5.	Construction	5.94	7.11	6.88	5.10	5.23	4.43	4.61	4.41	4.51	4.19
6.	Commerce & hotels etc.	8.52	11.27	13.75	14.73	19.61	19.66	20.49	17.85	10.53	10.36
7.	Transport & communication	6.95	7.11	7.11	7.02	6.96	6.41	6.41	6.64	9.79	9.48
8.	Finance & real estate etc.	3.48	3.63	3.70	3.76	3.33	3.55	3.61	5.42	4.49	4.23
9.	(a) Miscellaneous private services	0.67	0.66	0.64	0.61	3.41	3.51	3.06	0.77	0.66	0.58
	(b) Government services	7.72	8.58	9.72	10.42	8.89	9.45	9.77	15.18	14.92	15.89
	(c) Non-profit services	0.92	0.98	1.02	1.02	2.67	2.25	2.64	2.06	1.55	1.56

Source : IIEP estimates based on National Income Statistics and supporting tables, Department of Statistics, Khartoum, March, 1973.

Table 8. Savings and Investment (in £S. Million)

	1966	1967	1968	1969	1969/70	1970/71
1) G.N.P.	460.17	497.67	542.37	550.74	562.91	592.06
2) Investment	75.60	73.07	80.83	85.11	95.64	89.66
3) Savings	21.95	18.66	23.14	44.41	66.67	34.25
2) as % of 1	16.42	14.68	14.50	15.45	16.99	15.14
3) as % of 1	4.77	3.75	4.26	8.06	11.84	5.78
3) as % of 2	29.03	25.53	28.62	52.17	69.70	38.19

Source : Department of Statistics, National Accounts and Supporting Tables. Khartoum

Table 9. National Disposable Income (in £S. Million)

	1968	1969	1969/70	1970/71
1) Government consumption	112.10	132.55	147.72	159.04
2) Private consumption	405.51	372.67	348.52	400.53
3) Savings	23.14	44.41	66.67	34.25
4) National Disposable Income	540.75	549.64	562.91	593.82
5) Investment	80.83	85.11	95.64	89.66

Source : Department of Statistics, ibid.

at a very low rate of 6 per cent. The major share of increase in government consumption has been due to compensation of employees from domestic activities for reasons mentioned before.

In fact, gross domestic fixed capital formation went down from £S96 million in 1969-70 to £S73 million in 1970-71. The situation since then has remained unknown due to lack of statistics. To accelerate the pace of economic development the government has to control its own consumption, as well as private consumption, in order to increase the share of resources that are channelled into investment. Foreign investment has also to be attracted for the purpose. Although there are no statistics, it appears that foreign investment has been increasing during the last two years. Care should, however, be taken in increasing the productivity of these investments. Otherwise, low returns for investment would mean inability of the public sector to generate sufficient surpluses to meet the investment requirements, particularly the cost of borrowing for investments. There is no record of any significant increase in investment during the last decade. Gross domestic fixed capital formation as proportion to GDP has decreased from 16 per cent in 1962 to 14 per cent in 1971. Only in one year, i. e. 1969-70, investment increased significantly - by 12 per cent over the previous year. But in 1970-71 it decreased.

(viii) Labour force

The 1955-56 census revealed that approximately 37 per cent of the total population was engaged mainly in economic activities, while another 11 per cent was engaged in subsidiary economic activities. This estimate included anybody engaged in activities irrespective of age. Of the persons above 5 years of age, 59. 8 per cent were economically active (46. 2 per cent with economic activity as their main occupation and 13. 6 per cent with economic activity as their subsidiary occupation). Since then, three sample surveys, conducted in the six provinces of the North, give some information on the labour force but due to differences in definition, the results are not comparable (see Table 10). The census of the agricultural labour force does not spell out the definition of 'working' and 'non-working'. In the case of females, the overall percentage of working farm population was very high, mainly because of the higher percentages in Darfur and Kordofan provinces (62 and 51 respectively). The participation rate of males is observed to be less in the household sample survey than the previous census, because of the rapid increase in educational facilities. For females, this rate has gone up appreciably, probably because of changes in attitudes. The ILO projection, which does not reckon labour price in the age-group 0-9, estimates a participation rate of 32. 1 per cent, which is higher than the estimate of the household sample survey.

The sectoral distribution of the economically active population of Sudan is drawn from the 1967-68 Household Sample Survey. This gives the following percentage distribution of employment (see Table 11).

Over 70 per cent of the labour force was employed in the primary sector. Industry and mining contributed about 8 per cent of the GDP, but employed less than 1 per cent of the labour force. If the industrial sector has to be developed further (as it appears to be capital intensive now) and if more people are to be employed, a different strategy for industrial development, both size and structure, has to be adopted. As things are at present, most of the human resources of Sudan will have to continue to seek employment in the rural sector. This will make the employment situation in the rural sector worse and raise further the already high exodus of young people to urban

Table 10. Estimates of Labour Force

	In labour force (%)			Outside labour force (%)		
	M	F	T	M	F	T
1. Population Census (1955-56) (1)						
Children						
(1) 5 yrs to puberty	52.3	7.0	31.9	47.7	93.0	68.1
(2) adults past "	96.5	9.4	51.9	3.5	90.6	48.1
(3) total 5 yrs and over	82.5	8.8	40.6	17.5	91.2	59.4
(4) total population	66.4	6.9	37.1	33.6	93.1	62.9
2. Population & Housing Survey (1964-66) (2)	52.5	5.3	30.1	47.5	94.7	69.9
3. Census of Agriculture (1965-66) (3)	60.2	43.9	52.2	39.8	56.1	47.8
4. Household Sample Survey (1967-68) (4)						
(1) Urban areas	45.5	6.2	26.2	54.5	3.9	73.7
(2) Semi-urban areas	47.8	6.3	26.8	52.2	93.7	73.2
(3) Rural areas	50.2	10.5	30.0	49.8	89.5	69.9
(4) All areas	49.3	9.6	29.3	50.7	90.4	70.7
5. ILO Projections (5)						
1970	57.16	6.11	32.10			

N.B. (1) The classification was "gainfully employed", i.e. those with economic activity as the main occupation.

(2) Covered 82 centres in the six Northern provinces.

(3) Covered rural areas in six Northern provinces and classified the population between "working" and "non-working".

(4) The classification was "economically active" and "not economically active".

(5) Labour Force Projections, ILO.

Table 11. Percentage distribution of employment

Sector	Percentage			
	Urban	Semi-urban	Rural	All areas
Animal husbandry	0.38	0.97	4.77	3.96
Agriculture, forestry	6.03	30.19	79.98	67.45
Industry & mining	3.89	2.09	0.33	0.89
Handicrafts	6.60	6.46	2.93	3.62
Building & construction	3.28	3.33	1.10	1.54
Transport & communication	6.91	4.33	0.80	1.78
Commerce and trade	11.83	12.41	1.63	3.66
Other government services	29.39	19.32	2.03	6.56
Other private services	24.12	15.02	5.30	8.24
Seeking work for first time	7.56	5.87	1.17	2.29

areas. It is estimated that the additional number of people entering the labour force was increasing every year by an average of about 80,000 during 1950-60, 118,000 during 1960-70 and is expected to increase every year by about 170,000 during 1970-80. This is an increase of about 3.4 per cent per year.

(ix) The problem of the South

Just before independence in 1956, the Sudan faced the serious problem of a rebellion in three of its southern provinces, Bahr El Ghazel, Equatoria and Upper Nile. The origin of the rebellion lies in a secessionist movement promoted by pre-independence policies which exploited the cultural and historical differences between the North, which is mostly Arab, and the South, which is Nilotic. Before independence official policy was not geared to promoting the integration of the two parts. After independence an attempt to find a military solution simply aggravated the problem and many Southerners were engaged in guerilla-type activity against the government forces. In 1963 the Anya-Nya was formed to fight for 'independence' from the North. The worst phase of violence followed in the next three years. Schools were closed, many lives were lost, thousands of people took refuge in the neighbouring countries and economic activity came to a standstill. After the May Revolution in 1969, one of the first political decisions made was the granting of regional autonomy to the southern provinces. The Addis Ababa Conference of March 1972 was responsible for the cease-fire that was subsequently announced.

The solution to the question of the South realises the dream of the historian Arnold Toynbee who said: "The Sudan holds Africa's destiny in her hands. If she can succeed in reconciling the two elements in her own population, she will have done a piece of constructive pioneer work for the continent as a whole." The unsettled conditions in the South needed a large military presence with increasing expenditures on the armed forces and the consequent diversion of resources from economic development. Plans for the economic development of the South now have a better chance of being implemented. The soil and climate of the South enable it to produce commodities the Sudan was importing so far, namely tea, coffee and tobacco. Its rich timber resources and livestock potential can now be developed for the benefit of a united Sudan. International co-operation is coming forward for the implementation of the regional development plans. Careful planning should be done in these projects keeping in mind that a little bit of misunderstanding may result in serious consequences, because a twenty year-old dispute cannot be reconciled quickly. It is more important for the educational planners because education will be given priority in meeting the human resource needs so necessary for the development of the region.

D. PROBLEMS OF EMPLOYMENT

There has been no survey of unemployment on the overall structure of the labour force in the Sudan. The only source of unemployment statistics are the 25 employment exchange offices of the country. This gives only some indication of the magnitude and distribution of employability. Table 12 gives the number and percentage of registered persons with education up to the second level by employment status and category of occupation for the period January to June 1973.

It will be observed that the majority of the persons registered with only first-level education are unskilled workers and a major portion of the skilled workers registered have some previous working experience. The percentage of those registered with some second-level education is very high - next to that of the unskilled workers referred to above. The employability measured by the percentage of those employed with respect to those registered is highest for skilled workers with first-level education and lowest for those having second-level education. Females are employed to a lesser degree than males.

The majority of the persons registered with some second-level education come from academic streams, since there are very few streams in technical education in the second level (see Table 13).

The statistics in Table 12 reflect that there is a problem of unemployment in the Sudan. To know the exact magnitude, one needs to have more detailed information.

So far as higher education is concerned, the output of graduates has increased at a faster rate than the absorptive capacity of the economy.

Table 12. Number and percentage of registered persons by employment status, for the period January-June 1973
A = seeking a job for the first time; B = previously worked

		Unemployed			
		A	B	Employed	Total
Educated up to first level					
Unskilled workers	No.	8 760	7 494	481	16 735
	%	52.3	44.8	2.9	100
Skilled workers	No.	1 045	3 387	214	4 646
	%	22.5	72.9	4.6	100
Educated up to second level	No.	3 114	399	36	3 549
	%	87.8	11.2	1.0	100
Total males	No.	11 623	10 833	697	23 153
	%	50.2	46.8	3.0	100
Total females	No.	1 296	447	34	1 777
	%	72.9	25.2	1.9	100
All	No.	12 919	11 280	731	24 930
	%	51.8	45.3	2.9	100

Source: Department of Labour: Ministry of Public Service and Administrative Reform, 1973.

Table 13. Holders of qualification up to second level classified by qualification, January-June 1973

	Unemployed				
	A	B	Employed	Total	%
Senior acad. sec.	1 249	141	9	1 399	39.4
Commercial sec.	87	24	-	111	3.1
Technical sec.	61	11	2	74	2.1
Agric. sec.	3	-	-	3	0.1
Junior sec.	1 509	165	23	1 697	47.8
Other sec. qualif.	205	58	2	265	7.5
Total	3 114	399	36	3 549	100.0

Source: Department of Labour: Ministry of Public Service and Administrative Reform, 1973.

Table 14. Cost to the government for unemployed graduates, 1967-72

Year	Relief Fund £S	Allotment for university graduates £S	No. of posts
1967/68	750 000	416 091	681
1968/69	8 131 000	604 489	99
1969/70	2 458 170	158 860	260
1970/71	6 644 510	430 144	704
1971/72	9 797 710	515 684	844

Source: Department of Establishment.

This is revealed in the provision in the budget every year until 1972 of a special amount called the Employment Relief Fund for the employment of graduates who could not find a job. The cost to the government for these unemployable graduates during the period 1967-72 is given in Table 14.

The amount allotted for the university graduates has been increasing. All these posts were filled by graduates of the faculties of arts, commerce, law, economics, social studies, philosophy and religion. The guarantee that any graduate of a university with the same degree would be put on the same government scale irrespective of the need of the economy attracted too many students to the universities, particularly the University of Cairo which offered until 1972/73 degree courses in the evening. According to the recent information collected by the Department of Labour, the number of unemployed 1973 graduates is shown in Table 15.

The interesting feature of the information in Table 15 is the unemployment of technicians. It is clear that the Sudan is short of this kind of manpower. The reason for this may be attributed to the graduates' waiting for government posts. The private sector does not have the same degree of job security and according to the Ministry of Public Service, it often prefers expatriates even with higher salaries to citizens because of job performance. The University of Cairo produces the largest number of unemployable graduates. There is no problem of employment for the engineering, medicine and agriculture faculties. On the contrary there is strong evidence of shortage in these fields.

Statistics show that the number of posts in public service (total excluding police) has increased from 14, 151 in 1955-56 to 55, 636 in 1972-73 - almost four times whereas the economy has remained almost stagnant.

Table 15. Number of unemployed graduates as percentage of total number of graduates for some institutions in 1973

Institution	No. of unemployed graduates	No. of graduates	%
University of Khartoum			
- Faculty of Arts	49	150	32.7
- Faculty of Economics	66	167	39.5
- Faculty of Agriculture	3	38	7.9
- Faculty of Law	17	31	54.8
- Faculty of Science	29	94	30.9
University of Cairo			
- Faculty of Arts	153	251	61.0
- Faculty of Commerce	222	276	80.4
- Faculty of Law	61	104	58.7
Senior Trade School	21	39	53.9
Khartoum Polytechnic	13	102	12.8
College of Fine Arts	10	34	29.4
Islamic University	10	138	7.3

Source: Department of Labour, Democratic Republic of the Sudan

E. SUMMARY OF OBSERVATIONS

In concluding this section it is useful to summarize the socio-economic position of the Sudan by listing a few findings:

(a) The Sudan has tremendous economic potential largely unexplored. Carefully planned, development activities can make the country one of the most resourceful in the region.

(b) If the latest census results are accepted, the population of the country is not growing as fast as anticipated.

(c) The dependency ratio of the population (i. e. the number of persons under 15 years of age plus those of 65 years and over compared to the working age population) is higher at 89 per cent, than the average for the whole of Africa at 85 per cent. Such a large dependent population raises serious problems in the country's economic development.

(d) Increases in the costs of transportation of exported and imported goods have also contributed to the poor performance of the economy.

(e) The problem of the South caused diversion of a substantial amount of resources from development activities to maintenance of law and order.

(f) Lack of highly qualified staff in certain fields has retarded the exploration of natural resources and resulted in the poor maintenance of certain key operations, namely, the overland transport system.

Again, over-production of graduates in non-scientific fields has created problems of unemployment. The section on development of education will deal with the subject in more detail.

SECTION II - DEVELOPMENT OF GENERAL EDUCATION

Having briefly discussed the socio-economic framework of the country, we shall examine in this section the role of education in the development of the country. In the process, we shall analyse the historical background of the educational system, the present structure of the system and emphasize the role of higher education in the overall educational system.

A. HISTORICAL BACKGROUND

The Sudan's educational system had its roots in the Islamic culture. In the seventeenth century, the demand for education was felt with the spread of Islam. It started with the need to learn the 'Koran'. So it was mostly religious education to be offered in the 'Khalwas'. This system continued until 1820 when the Sudan was occupied by the Turco-Egyptian forces. The educational policy during their rule was influenced by the attitude of Egyptian rulers in Egypt and their agents in the Sudan. In addition to the Koranic schools, the need for setting up a few state schools to produce the personnel needed for administrative purposes was felt for the first time. During 1838-39 six Sudanese students were sent to Egypt for training in agriculture. The first primary school was established in Khartoum in 1853, it closed down the following year. It took another nine years for modern education to be started in the Sudan with the establishment of five primary schools in five regions. Two vocational training schools were set up in 1870 to meet the needs of the telegraphic system. The river service system started a training course for skilled workers and artisans. The establishment of a training course in medicine and pharmacy followed from the need of health care for the increasing number of government employees. Plans were drawn up to establish a technical school in Southern Sudan to cater for the local needs. Another plan was drawn up to train a large number of Sudanese for the agricultural needs of the Sudan through a Community Development Centre in Egypt but this plan was never executed. However, in 1881, a farm was started to the South of El Obeid to train 300 families in agriculture. In 1879 a school of medicine and pharmacy was established, replacing the training courses already in existence in these fields. Meanwhile, in the South, education was spreading through missionary efforts.

Moslem education was replaced by a number of traditional religious schools during the Mahdist regime (1885-98), although the graduates of the schools set up during the Turco-Egyptian rule continued to form the core of the bureaucracy and technical staff.

During the Condominium period the Sudanese administration was in many ways acting as if the Sudan were an independent country. But there was lack of skilled labour, lack of water for irrigation and above all a lack of achievement motivation among the people. The economic situation was deteriorating fast. Resources for development and for expenditure on social services including education were limited by the government revenue from local taxation and contributions from Egypt. It became essential to minimize expenditure on education that was not relevant for Sudan's economic needs. The objectives of education were laid down to help the administration to function, to develop the economy and also to "distract the educated from revolt by giving them employment".[1] It should be noted that technical and vocational education were emphasized not only to meet the demand for skilled workers, but also for political purposes during this period. The trained craftsman was thought to be detached from the ranks of the dissatisfied class of patriots.

The foundations of the Sudanese educational policy during this period were laid down by Kitchener and Wingate, the first two Governors-General in the Sudan, and Currie, the first Director of Education. The aims of education set out by Currie[2] were:

"1. The creation of a competent artisan class which is entirely lacking at present.
2. The diffusion among the masses of the people of education sufficient to enable them to understand the merest elements of the machinery of government, particularly with reference to the equitable and impartial administration of justice.
3. The creation of a small native administrative class who will ultimately fill many minor government posts.
4. Training the Sudanese to replace Egyptians in the army, and Egyptians and Syrians in the junior administrative positions."

During this period the traditional Khalwas were encouraged to introduce elements of secular education, such as arithmetic, into the curriculum.

Material benefits arising from employment in government service helped to allay the fears and bring about a new attitude towards education. The Gordon Memorial College was opened in 1902. The first two primary schools were established - one in Omdurman in 1900 and

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1. Mohamed Omer Beshir, Educational development in the Sudan, Oxford, Clarendon Press, 1969, p. 27.
2. Ibid., p. 29.

another in Khartoum in 1901. The course in the primary schools was for four years and the syllabus was similar to that prevailing in Egypt. The objective of these primary schools was to produce junior clerks, telegraphists and land measurers. Admission requirements at first were advanced instruction in Khalwas and later modified to attendance in the government elementary schools. To cater for the needs for civil and criminal justice, a training college for the training of Sharia judges with a five-year course was established for students who had attended Khalwas and attached to the Omdurman Primary School in 1900. To meet the need for teachers, a training college for teachers was also established in the same place during the same period. An industrial school with a course of three years in building, pottery, carpentry, fitting, smithying, mould's work and cotton ginning was attached to the Omdurman dockyard in 1901 for those who had had preliminary instruction in the Khalwas. The training colleges and the Khartoum Primary School were transferred to the Gordon Memorial College in 1903 when the building was completed. A workshop course was started, extending over four years during which the usual school subjects were taught and also practical subjects including carpentry, pottery, technical drawing and elementary mechanical engineering. Beginning of irrigation work in the Sudan needed Sudanese to be trained in surveying and construction, and in 1905 two secondary courses were started in the Gordon Memorial College: a four-year course to train assistant engineers and overseers, and a two-year course to train land surveyors. Another four-year course to train primary school-teachers was started in 1906. All these courses were post-primary. To develop scientific research, a bacteriological and analytical laboratory was set up in 1905. A military school was also established in 1905. This offered a three-year course and the students used to attend relevant courses with the college students. Meanwhile, primary and elementary schools were expanding. In 1906 there were 762 students in the primary schools. Admission was restricted to cater only for the needs of the Gordon Memorial College for minor government posts to avoid the creation of an unemployed educated class. Arabic was the medium of instruction in the elementary schools, English in the primary and post-primary schools. The number of boys attending government elementary schools rose from 1,280 in 1907 to 6,086 in 1918 in 73 schools.

Extension of railways called for necessary development in technical education, although not at the same rate as elementary education. There were 281 boys attending technical schools in 1914. No serious consideration was, however, given to girls' education until 1906. The first girls' school was established in Rufa in 1908 by Babiker Bedri.

By 1908 the foundations of a government system of education embracing elementary, primary, secondary, technical and military schools were established.

Like the Gordon Memorial College, the Omdurman el Mahad El Ilmi became the centre of religious learning and teaching during that period. The training in the Mahad was not related to the needs of the government service. The major contribution of the Mahad in Omdurman was to produce teachers for the Khalwas and preachers in mosques and those who sought higher Islamic studies came to the Mahad. It had three courses, each leading to a certificate: al Ibtidaiya (primary), al Ahlia (national) and al Alamia (higher). Arithmetic and Arabic composition and dictation were added to the subjects studied. The Mahad by then became a national institution. Meanwhile, Christian missionary education was also spreading in Northern Sudan. By 1912 a number of such schools were established in different regions. The school in North Khartoum developed into an intermediate and secondary school for girls, the first such school. These schools were attended by Coptic Christians and Moslems, and were catering mostly for girls with emphasis in the curriculum on domestic science and home economics.

Thus before World War I, three systems of education, each with its own objective, were developing side by side in the northern provinces.

Education in the southern provinces remained completely under the control of the different Christian missionaries prior to World War I. In the schools main emphasis was laid on the teaching of Christianity. The Roman Catholic missionaries emphasized technical and industrial training. The Anglican Missionary Society and the American Presbyterian Mission emphasized the art of reading and writing. English replaced Arabic as the official language of education. Most of the schools were for boys but a few elementary schools were established for girls. In these schools hygiene and domestic science were taught. Although progress of education in the South was slow, the different objectives and different media of instruction widened the gap between the northern and the southern provinces. However, the system of modern education was born in the whole of Sudan prior to World War I under the Condominium rule.

After World War I indirect rule prevailed in the Sudan and the objectives of education were modified on the basis of Milner's report[1], which advocated the training of the Sudanese for employment in occupations other than those provided by the government service, such as agriculture, commerce and industry. It also argued in favour of enabling the Sudanese to replace the non-Sudanese junior officials, mainly the Egyptians who outnumbered them and were reluctant to be employed in the Sudan. The Khalwas' role was enlarged to meet the local needs in respect of education and training. The number of assisted Khalwas increased from 6 in 1918 to 768 in 1930. The number of students increased from 200 in 1918 to 28,669 in 1930, almost 150 times in 12 years. This temporarily checked the growth of elementary education. In 1920 there were 80 elementary schools with 7,000 boys. In 932 the number of boys was 8,943. The important event during the post-World War I educational development was the establishment of a mobile school for the nomads in 1921. The teacher who was appointed to the Kababish tribe lived and travelled with the tribe. The indirect rule resulted in the development of native administration, where the judiciary powers were handed over to the native authorities, having a retarding effect on the development of training courses in administration and Sharia law.

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[1] Milner Report, 1921.

It was thought feasible to adapt the schools of the southern region more closely to traditional values, by using some indigenous educational content as the basis of school curriculum. A comprehensive scheme of education in the South was prepared by the government in co-operation with the mission authorities. A grant-in-aid system was introduced for those schools which were (i) supervised by Europeans only, (ii) willing to accept government inspection, and (iii) efficiently run. This system immediately resulted in rapid expansion of educational facilities in the South. The number of elementary boys' schools increased from 27 in 1927 to 34 in 1938. Eighteen elementary schools were established during this period.

Replacement of the Egyptian personnel, the extension of the railway network and the completion of the Sennar Dam in 1925, needed more and more qualified Sudanese people. The number of pupils in Gordon College rose from 118 in 1920 to 555 in 1930 and that in the technical schools increased from 255 in 1922 to 387 in 1930. Even then, supply fell far short of demand as indicated in Table 16.

There was therefore a need for meeting this demand from abroad. Another significant development in the field of education occurred in the establishment of the Kitchener School of Medicine in 1924, the first medical school with a comprehensive syllabus to be established in Northern tropical Africa. The Gordon Memorial College changed its role in that the primary section was moved out in 1924 to make room for post-primary education, mostly vocational, and also to supply students for entry to the Kitchener School of Medicine.

Table 16. Supply and demand of qualified Sudanese technicians

Year	No. of vacant posts	No. of graduates available from Gordon Memorial College
1925	101	50
1926	103	42
1927	129	53
1928	145	62

This period also saw the beginning of the voluntary efforts in education in the establishment of the Omdurman Ahlia School in 1927. The Ahfad schools of Babiker Bedri and the Omdurman National School were the pioneers of the national voluntary system of education. To supervise all non-government schools, the Education (non-government) Schools Ordinance of 1927 was promulgated. The economic depression of the early thirties had its effect on the Sudanese education system. The depression was responsible for reduction in expenditure on education. The intake to Gordon College was also reduced. Educational activities decreased at all levels and a general discontent prevailed between the educated class and the administration. The educated Sudanese suggested retrenchement of non-Sudanese officials to make room for the Sudanese and they also suggested reforming the education system so as to cater for the needs of the private sector which was so far monopolised by the foreigners. A committee was formed to review the system of education in 1932. It was recommended that the educational output should not exceed employment possibilities and the intermediate school should change its function from preparing boys for Gordon College to that of supplying qualified manpower for minor provincial posts and the requirements of commerce and agriculture.

Bakht er Ruda, the elementary teachers' training college was born with rural and professional bias, as the first step towards reforming Sudanese education.

The above reform was followed by separation of technical training from Gordon Memorial College in 1936 to be taught in higher schools of engineering, agriculture and veterinary science. The Khartoum School of Law was established in 1935 providing openings for the Sudanese as advocates and judges in civil courts. The De La War Commission of 1937 recommended further changes in the curriculum and method of teaching at different levels of education to make education relevant to working life. The most important recommendation of this commission was to reorganise and redefine the role of the Gordon Memorial College which was under criticism in various aspects. Its role was to be changed from a secondary school to an institution which would award, through public examinations, certificates that would permit its graduates to secure British qualifications. Establishment of schools of science, art and commerce was also recommended to form the basis of a future University of Khartoum with its existing schools of medicine, agriculture, engineering and veterinary science. These schools were recommended to award their own diplomas. The standards of such diplomas were to be ensured by external examiners. Thus the De La War Commission's recommendations laid the foundations of higher education in the Sudan.

B. THE FIRST EDUCATIONAL PLAN OF THE SUDAN (1938-46)

On the basis of the reports of several committees mentioned above the first educational plan in the Sudan was launched in 1938, with the

Table 17. Number of schools by type for selected years from 1927-38

Type of school	1927	1932	1934	1936	1938
village schools	-	189	310	392	585
elementary schools (boys)	27	29	31	34	34
elementary schools (girls)	-	5	16	17	18
intermediate schools (boys)	3	3	3	3	3
trade schools (boys)	2	3	3	3	3
normal schools (boys)	-	1	2	3	2

Source: Mohamed Omer Beshir, op. cit., p. 127.

following objectives:

1. Improvement and expansion of lower levels of education.
2. Expansion of higher and secondary levels of education.
3. A gradual expansion and participation by the government in education in the South.
4. Establishment of a new two-year elementary school system to replace the inefficient Khalwas, as an integral part of the educational system.
5. Establishment of a training centre for their teachers.
6. Increase in the facilities at Bakht er Ruda Elementary School to serve in addition to its main purpose of teaching practice, as a school for sons of tribal chiefs.
7. Expansion in elementary education for girls and establishment of an intermediate school for girls in Omdurman.
8. The development of adult education.
9. The control of admission to secondary schools based on the estimated absorptive capacity of the country.
10. The transfer of Gordon College to a new site where full secondary education with no vocational training would be followed.
11. Consolidation and reorganisation of education in the South under missionary control with limited government participation.
12. Improvement of the missionary teaching personnel through increased subsidies or grants.

A sum of £E500, 000 was allocated for the capital cost of the plan of which £E154, 000 was earmarked for the rebuilding of the secondary school recommended by the De La War Commission and £E42, 000 for Bakht er Ruda. The recurrent expenditure was to increase from £E140, 000 in 1936 to about £E300, 000 in 1946. Share of education in the whole budget increased from 3. 3 per cent in 1936 to 5. 9 per cent in 1938.

Fifty per cent of the capital expenditure was allocated to secondary and higher education. Seventy-five per cent of the recurrent expenditure was allocated to the improvement and expansion of lower levels of education. Grants-in-aid for the southern provinces increased from 7. 5 per cent in 1938 to 9. 0 per cent in 1946.

Rising costs of materials and labour during World War II decreased the achievements in elementary education. 128 elementary schools for boys and [illegible] elementary schools for girls were established against the targets of 150 and 82 respectively. The number of men teachers was increased to 469 as against the plan target of 545 and the number of women teachers was increased to 225 as against the target of 302. The number of boys attending elementary schools increased from 13, 773 in 1938 to 22, 015 in 1946 and the number of girls in elementary schools increased from 3,411 in 1938 to 7, 747 in 1946. Even then, these increases were less than the targets. The increase in the role of the elementary schools decreased the number of children attending the Khalwas from 221,000 in 1935 to 9,992 in 1946. Due to the war the transfer of the secondary school was postponed until 1946, when it was shifted to Wadi Siednna and a new secondary school was established at Hantoub.

The number of students of Gordon College increased from 384 in 1934 to 528 in 1946. Approximately 50 per cent of the students were sons of government officials and army officers at that time.

The development of higher education was reflected in the functioning of the schools of agriculture, veterinary science, engineering, science and arts with courses for Arabic teachers, general teachers and administrators. The entry to these schools was regulated by the needs of the various government departments. Demands for future employment were constantly studied and kept in mind. The number of students in the higher schools increased from 148 in 1942 to 163 in 1944. In February 1945, the new Gordon Memorial College embracing all higher schools except the Kitchener School of Medicine was inaugurated with the functions of teaching, research and extra-mural work. A special relationship was established with London University which made it possible for the students of the Gordon Memorial College to enter for London degrees with special conditions and syllabuses adapted for the circumstances in the Sudan. Thus by 1946, higher education in the Sudan entered a new phase.

In the South, according to the plan only two elementary schools for boys were established during the period. Grants-in-aid were increased from £E9, 155 in 1937 to £E26, 650 in 1946. Girls' education was given emphasis in the appointment of a commission, which recommended that "education for girls should be in the closest possible relationship with actual life and therefore, besides the three R's and religious instruction, the schools should teach hygiene, agriculture and care of animals, nature study, arts and handicrafts."

The government established a post-intermediate training centre in

Juba in 1942 for the training of medical assistants with a three-year course and agricultural assistants, clerks and accountants with a two-year course. In 1944 the government established a village school and a central school in Bahr el Ghazal and Upper Nile respectively.

The slow progress of education in the South affected the process of southernisation of the government service, as indicated in the trend of southernisation for clerical and technical staff (see Table 18).

The first educational plan did not aspire much nor did it achieve much in the South.

C. THE SECOND EDUCATIONAL PLAN (1946-56)

Following the first plan, a second educational plan was prepared for the period 1946-56 which suggested many structural changes and expansion of elementary education with very little emphasis on higher education. The plan called the 'Brown plan' was not however implemented. Instead, two educational plans for the North and the South

Table 18. Trend of southernisation in the clerical and technical staff during 1932-44

	1932	1934	1936	1938	1941	1944
Clerical staff						
a) Total number of staff employed by government depts. in southern Sudan	260	147	148	159	198	267
b) Number of southerners employed by govt. depts.	72	78	85	100	81	136
c) b) as % of a)	45%	54%	57%	63%	41%	51%
Technical staff						
a) Total number employed by govt. depts. in southern Sudan	245	175	226	228	916	809
b) Number of southerners employed by govt. depts.	118	77	94	106	405	369
c) b) as % of a)	48%	44%	41%	46.5%	44%	45%

Source: Based on Mohamed Omer Beshir, op.cit., pp. 128 and 147.

were approved by the Legislative Assembly in 1949, which took into consideration the recommendations made by a special committee, which revised the 'Brown plan' for the North and the reports of the Technical Education Committee and the Sudanisation Committee submitted earlier. The objectives of the plan were directed to:

1. A change in the educational policy from one emphasizing education for employment to one emphasizing the education of individuals by developing their character and inculcating in them a civic sense and a sense of responsibility and self-reliance, adventure and initiative.
2. The provision in the shortest possible time of universal elementary education in all parts of the country; intermediate schools in all the major towns and secondary and higher education to provide the necessary numbers required for employment in government and non-government services.
3. Decentralization of the administration of education so as to enable local government authorities to assume more responsibilities and allow them to adopt educational policies and programmes suited to their particular needs.
4. Reduction of the costs of education through cheaper buildings, employment of more Sudanese teachers in secondary schools, larger classes in schools and less expenditure and effort on research and experimentation.
5. Changes in salaries of technicians to attract students to technical schools and expansion of technical education at the middle level to bridge the gap between highly-trained engineers and unskilled workers.
6. Sudanisation of senior and middle administrative and technical posts.

With these objectives, the plan for the North recommended that recurrent expenditure be increased from £E841, 320 in 1949 to £E1, 500, 000 in 1956 and capital expenditure during the period be in the order of £E2, 593, 110.

A technical institute was established in Khartoum in 1950 "to provide full-time courses in various branches of technology, commerce and arts, leading to standards at sub-professional level and, part-time and evening courses of a similar type."[1]

The plan for the South had the objectives of:

- Unification of the education system with the North.
- Extension of the government control of the education system.
- Improvement of the quality of teachers.
- Preparation of suitable Arabic materials for schools.
- Provision for mass literacy work.

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[1] Sudan Government, Report of the International Education Commission, 1955, p. 78.

To achieve the first two objectives, 26 government elementary schools were planned to be established; the Institute of Education at Bakht er Ruda was to train the teachers for the South, to meet the third objective. For the fourth and fifth, a Publications Bureau was established in Juba. Grants-in-aid to missionary schools were increased from £E109,209 in 1949 to £E314,000 in 1956. Recurrent costs were estimated at £E665,200 in 1956 and capital costs at £E907,952.

Current expenditure on education rose from £E1,702,717 or 7.8 per cent of the total national budget in 1951-52 to £E3,907,230 or 11.8 per cent of the total budget in 1955-56.[1]

A Ministry of Education was established in 1948 and power enjoyed by the Governor-General was delegated to the Minister so far as non-religious and Sudanese education were concerned.

By July 1950, 919 posts held by British officials out of 1,069 and 87 posts held by Egyptian officials out of 153 were Sudanized.

Three branches of the Institute of Education were established in Deling, Shendi and Maridi to train elementary teachers. An Intermediate Teachers' Training College was also added at Bakht er Ruda in 1949 to solve partially the problem of qualified teachers during that period. Non-government education expanded fast during that period due to the efforts of the Graduates' Congress. Quality of education suffered, however, for lack of good quality teachers and involvement of students in non-educational activities, especially the freedom movement of the country.

An International Education Commission was invited in 1955 to review the system of secondary education and devise a new system suitable to the latest requirements of political and economic development in the country. The Commission, however, went beyond the secondary system and dealt with all parts of the education system, except the University College. The report emphasized a system of education which would (1) help develop the potential resources of the country with the help of modern science and techniques; (2) produce capable Sudanese to run the Government Departments and meet other national needs with efficiency, technically and with character, integrity and devotion in an independent Sudan; (3) help unification of the country and enhance equality of opportunity among the masses and eradicate "customs and traditions which are reactionary or out of harmony with the new shape of things", and (4) emphasize character building.

To make education more relevant to the needs of the society, secondary education was recommended to be diversified, which could also take into account the varying abilities of the students. Two committees one consisting of local experts and educationalists to revise the syllabuses and curricula according to national needs and the other consisting of educationalists, industrialists and other interested bodies to advise on technical education - were also recommended to be formed.

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[1] Sudan Government, Annual budget, 1956.

The establishment of a centre to undertake post-graduate training for teachers was also recommended.

Meanwhile, the higher education system was also developing in various ways to respond to the needs of the society. Degree courses were started in the University College in 1947. Local diplomas were being awarded to those who could follow the degree courses. Emphasis was laid on organising syllabuses and curricula to transform the higher schools into a proper University College. The Ordinance of 1 September 1951 brought the Gordon Memorial College and the Kitchener School of Medicine into a single institution as a public corporation. The University College was proposed to be an independent university by 1 July 1955. Faculties of architecture, philosophy and geology were established in 1956.

A branch of Cairo University was established to train students in commerce, arts and law during the evening to offer degrees of Cairo University. 286 students were admitted in 1956 but the quality of intake was inferior to that of the University College. Most of the students were government officials. Thus, higher education expanded very fast during 1948-56; enrolment in the North in 1956 was twice that in 1948. Educational progress in the South was much slower than in the North due to the attitude of the mission authorities and the southern educated class, the lack of confidence between the southerners and the northerners, and above all, the existence of two different educational systems in the two regions.

So the Condominium Government may be given credit for laying the foundations of higher education in the North, but may also be held responsible for their indifference in unifying the educational system of the South and the North for which the South has suffered. Misunderstanding and conflict continued to persist for a period of 16 years after independence.

D. DEVELOPMENT OF GENERAL EDUCATION SINCE INDEPENDENCE

Since independence, Sudan's education has expanded quite fast. At the time of independence, i.e. 1956-57, enrolments in public junior elementary schools, elementary schools, intermediate schools and secondary schools were 66,036, 137,150, 10,314 and 3,790 respectively. The corresponding figures in 1968-69, prior to the May revolution, were 118,812, 409,961, 45,719 and 18,525 respectively. These show average annual growth rates of 5 per cent, 9.5 per cent, 13.2 per cent and 14.1 per cent respectively.

Formal education started at the age of seven, although it was not compulsory. With a total period of four years in elementary schools, there was a limited entry to intermediate schools also of four years' duration and followed by a still limited entry to the secondary school for the same period. At both intermediate and secondary stages, alternative types of education and training were provided in the form of intermediate technical schools and secondary technical or commercial schools. Post-intermediate trade schools were offering practical courses of three years' duration for those who could not get a place in the secondary schools.

At independence there were only 31 classes in government secondary schools. In 1968/69 there were 636 classes in higher secondary level alone. The overall government education budget increased from £S6,438,806 in 1956/57 to £S26,203,294 in 1968/69, i.e. at an average annual growth rate of 12.4 per cent at current prices.

Similar expansion was observed in the field of technical, teacher training and higher education also. In the public sector enrolment in technical schools increased from 1,027 in 1956/57 to 6,261 in 1966/67, although this decreased to 2,677 in 1968/69 due to shifting of technical education at the post-intermediate stage. Enrolment in teacher training increased from 712 in 1956/57 to 3,196 in 1967/68, decreasing to 2,780 in 1968/69 due to change in the duration of elementary teacher training courses. Enrolment in the University of Khartoum increased from 802 in 1956/57 to 3,448 in 1968/69. In the University of Cairo the private university enrolment increased from approximately 422 in 1956/57 to 4,595 in 1968/69. It is in the field of university education that expansion took place at the fastest rate.

(i) The present structure of the education system

Since the May 1969 revolution, education has been given still more importance in the country's development programme. The following objectives have been set: (1) To introduce compulsory elementary education even in nomadic areas. (2) To establish sufficient educational facilities at school level in every area of the Sudan. (3) To diversify education so as to produce more specialists. (4) To expand technical education to meet the grave shortage of Sudanese technicians. (5) To expand girls' education in recognition of the fact that women were the driving force behind the building of a modern society. (6) To make education to the level they are qualified for, a basic human right of all Sudanese. This last objective, however, was contrary to the gradual control to higher levels of education formulated in the five-year plan that followed.

The educational system which had a 4-4-4 ladder of years in each stage of schooling until 1969 changed to the 6-3-3 ladder in 1970. One objective of this structural reform was to increase the retention rates of primary students into the secondary level. During the period 1965-69, these rates varied from 11.04 per cent to 12.9 per cent of primary students. After the introduction of the new ladder, retention rates increased. In 1973-74 there were 20 students at the secondary level for each 100 students at the primary level. The increase may be attributed among other things to the introduction of vocational training for those who fail the primary and general secondary examinations, and to the fact that examinations after four years have been shifted to the end of six years of primary education.

Table 19 gives the progress of education during the period 1963-73. Although the number of students at primary level more than doubled

Table 19. Progress of Education during the last ten years

	Elementary & Primary				Intermediate & Junior Sec.				Higher secondary				Total			
	School	Class	Teacher	Pupils	School	Class	Teacher	Pupils	School	Class	Teach.	Pupils	School	Class	Teacher	Pupils
1963/64	2 948	8 852	8 098	405 258	367	1 395	2 660	44 489	121	415	964	15 298	3 436	10 662	11 722	465 045
1964/65	2 963	9 128	10 021	443 796	435	1 575	2 852	59 414	129	475	1 127	17 515	3 527	11 178	14 001	520 725
1965/66	2 461	8 164	8 605	417 008	440	1 587	3 360	61 819	129	491	1 180	19 154	3 030	10 242	13 145	497 981
1966/67	2 761	9 020	9 819	445 002	636	1 954	4 136	78 301	153	547	1 318	21 937	3 550	11 521	14 773	545 240
1967/68	2 825	9 362	9 459	459 445	708	2 316	5 136	96 083	190	609	1 603	25 320	3 723	12 307	16 198	580 848
1968/69	2 837	10 424	10 634	528 718	767	2 570	5 627	111 729	191	626	1 544	98 241	3 795	12 630	17 805	668 698
1969/70	3 101	11 019	11 876	569 628	827	2 879	6 431	125 972	233	736	1 953	31 909	4 161	14 634	20 260	727 509
1970/71	3 731	16 703	17 779	816 859	709	2 072	5 202	97 352	223	615	1 859	27 467	4 663	19 390	24 840	941 678
1971/72	3 895	18 985	22 905	921 929	918	2 406	5 292	91 458	294	777	2 590	35 317	5 115	22 248	31 571	1 048 704
1972/73	3 895	20 446	23 535	1 015 230	991	2 692	6 076	115 161	295	838	3 615	42 416	5 181	23 977	33 226	1 112 797

during the period, which was matched by a corresponding increase in the number of teachers and the number of classes, the number of schools increased at a much slower rate. Similar is the pattern of development at intermediate or junior secondary level and higher secondary level. Although quantitatively the number of teachers increased almost proportionally, the quality of the teachers may actually have deteriorated, due to slower expansion in the teacher training colleges.

In 1973-74 there were 4,051 primary schools - 2,714 for boys and 1,337 for girls. The total number of students is 1,031,390. Those who fail the primary examination may continue to one of the eight vocational training centres run by the Ministry of Youth (see Figure 1, C). Those who pass the primary examination may proceed to secondary general education with a duration of three years (see Figure 1, B). In the Sudan, out of 161,000 students enrolled in the first year of the primary level in 1966, approximately 47,000 continued their education into the first year of the general secondary stage in 1972. This means that approximately 110,000 or 2/3 of the students have either dropped out of the education system or are repeating in the lower classes. It is believed that the proportion who repeat is small. The rate of wastage between primary and general secondary levels is therefore very high.

The total number of general secondary students was 163,500 in 1973-74. Those who fail the general secondary examination may go to the four vocational training centres (see Figure 1, D) located in Khartoum, Port Sudan, Nyala and Marawi, or may attend evening schools conducted by the Teachers' Union of the Sudan. There were less than 500 students in the vocational training centres in 1972. 283 students attended the evening schools where a nominal fee is charged.

Those who pass the general secondary examination may proceed to either the higher secondary academic stage (see Figure 1, E), or to the teacher training institutes for primary schools with a duration of four years (Figure 1, F), or to the higher secondary technical schools (see Figure 1, G) for the same duration. The first year of the academic stage is general. The next year students branch out into the arts or the science stream. Out of a total enrolment of 27,300 students in the first year of general secondary education in 1969, 16,800 students (i.e. 62 per cent) reached the first year of higher secondary academic education in 1972.

There were 4,066 students in the teacher training schools and 4,609 in the higher secondary technical schools in 1973/74. 61,600 students were enrolled in all types of schools offering higher secondary education in the country in 1973/74. Of these only 2,640 were in the southern provinces. Not shown in Figure 1 are the evening schools organised by the Teachers' Union for students who want to repeat the higher secondary examination after failure. There are 7,299 students (5,655 boys and 1,644 girls) in such schools.

Even with this rapid expansion the target percentage of intake of children aged 7 in the primary schools has remained far off in 1972-73. Only 42.3 per cent of the total number of 7 year-olds were admitted to

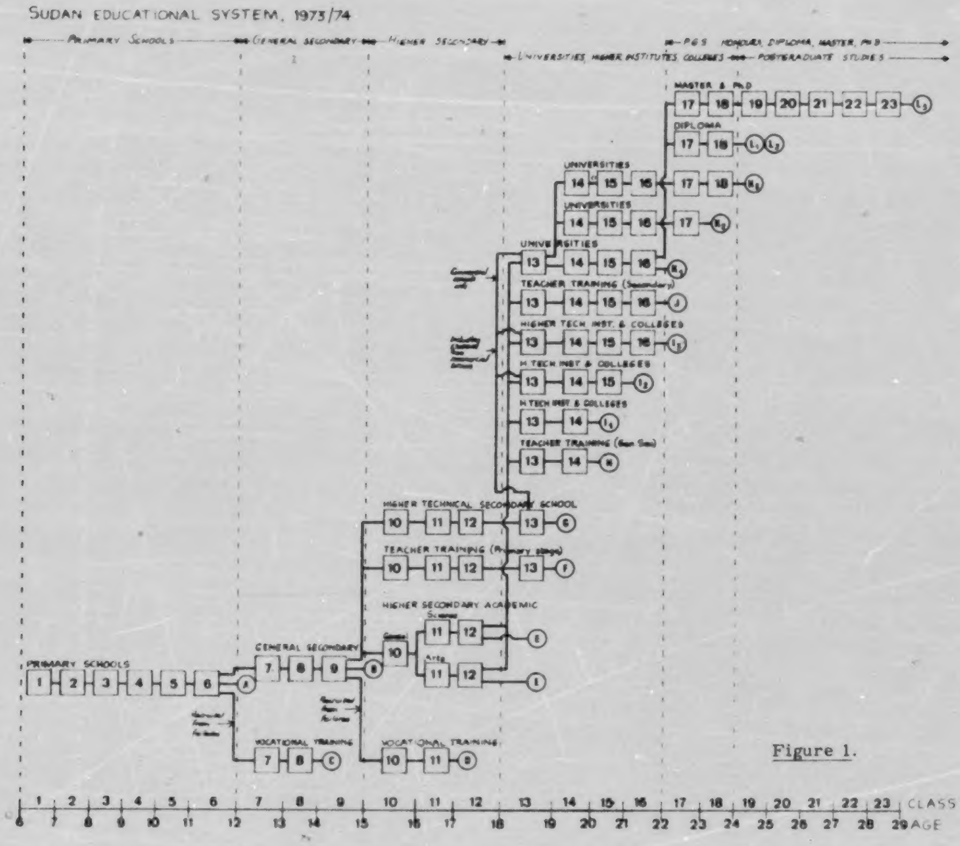
SUDAN EDUCATIONAL SYSTEM, 1973/74
PRIMARY SCHOOLS
GENERAL SECONDARY
HIGHER SECONDARY
UNIVERSITIES, HIGHER INSTITUTES, COLLEGES
P G S HONOURS, DIPLOMA, MASTER, PH D
POSTGRADUATE STUDIES
MASTER & PhD
DIPLOMA
UNIVERSITIES
TEACHER TRAINING (Secondary)
HIGHER TECH INST. & COLLEGES
H TECH INST & COLLEGES
TEACHER TRAINING (Gen Sec)
HIGHER TECHNICAL SECONDARY SCHOOL
TEACHER TRAINING (Primary stage)
HIGHER SECONDARY ACADEMIC
Science
General
Arts
VOCATIONAL TRAINING
A
B
C
D
E
F
G
H
I
J
K1
K2
K3
L1
L2
L3
CLASS
AGE

Figure 1.

the first grade of primary schools against a target of 45.7 per cent in 1972-73, the third year of the current plan period. The corresponding figure in 1969-70 was 42 per cent. The possibility of increasing the intake to nearly 49 per cent by the end of the plan (1974-75) is remote. Introduction of compulsory elementary education remains further off. Junior secondary education has increased faster than anticipated, from 31.8 per cent of the six grade completers in 1969-70 to 46.5 per cent in 1972-73. This was a result of a new policy advocating intake into junior secondary schools of all successful completers of primary level. This was, however, a deviation from the original plan of reducing this proportion to 22.4 per cent by 1974-75. There was also a slight increase in the intake to the first grades of higher secondary schools from the completers of the junior secondary schools in 1972-73, the actual percentage being 45.9 per cent against the planned target of 45.2 per cent. In 1969-70 the corresponding proportion was 37.6 per cent.

(ii) The student flow rates

Table 20 demonstrates the flow of students from first primary grade to the twelfth higher secondary grade during the period 1969-73, for public and private education. It will be observed that out of 97.8 thousand enrolled in the first grade in 1959, only 7.0 thousand came to the twelfth grade in 1970. The crude retention rate was 15 per cent. After the introduction of the new ladder, the corresponding rate increased to 29 per cent in 1972 and 1973 from the grade one intakes of 1966 and 1967. These retentions will however include some repeaters from the previous years. In 1973, 23 students out of 100 in grade one have a chance to come to the twelfth grade.

(iii) Distribution between male and female students

Since independence educational opportunities for women have increased. In 1973-74 the male/female student ratios at primary, junior secondary and higher secondary levels were 2:1, 3:1 and 4:1 respectively.

(iv) Distribution of enrolment as percentage of the population in the relevant group by provinces

Education in the Sudan is not evenly distributed among the different provinces: 5.7 per cent of the total population enrolled in all levels of schools in 1970-71; 19.7 per cent of the population in the age-group 7-18 distributed by provinces and levels of education as shown in Table 21. It will be observed that Khartoum, Northern and Blue Nile have the largest share of school population followed by Kassala, Kordofan and Darfur. The southern provinces have the smallest share

Table 20. Time-series - number of students at different grades year by year in public and private education (Sudanese system) on 1 July each year (000)

Grade	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
1st primary	97.8	108.8	113.6	123.3	140.7	154.7	148.0	160.9	163.8	174.8	183.6	193.0	197.5	208.8	214.7
2nd "	79.7	87.2	91.4	111.3	116.0	132.4	133.8	137.1	141.5	143.5	171.6	180.2	178.5	194.1	205.2
3rd "	65.8	71.5	74.7	82.1	90.1	98.2	108.4	115.1	117.5	130.2	142.0	170.0	170.7	174.4	188.5
4th "	45.1	50.1	51.4	55.3	62.9	70.1	72.0	86.5	93.3	114.5	127.8	139.2	148.0	166.2	169.2
5th "	13.6	15.5	13.9	14.9	17.9	21.2	21.3	28.1	29.6	35.7	38.3	123.2	127.1	142.0	159.6
6th "	12.6	13.2	13.1	13.5	14.4	17.6	18.2	21.6	27.0	29.4	34.4	36.8	110.1	129.7	144.9
7th gen.sec.	10.4	12.9	11.5	12.4	12.9	14.0	15.4	16.5	21.8	26.5	27.3	32.0	38.0	47.1	48.7
8th " "	9.7	11.5	10.9	10.9	12.1	12.5	13.8	15.4	15.9	21.4	25.2	26.1	28.0	39.1	46.2
9th " "	4.3	3.9	3.6	4.3	5.6	6.7	6.1	6.6	8.0	9.2	10.7	23.9	25.4	29.0	40.4
10th higher sec.	3.8	4.4	3.0	3.6	4.3	5.7	5.5	5.6	6.4	7.5	8.7	10.2	14.4	16.8	14.6
11th " "	3.3	3.8	2.5	2.9	3.5	4.3	4.8	5.1	5.5	6.3	7.2	8.4	11.3	14.2	15.3
12th " "	2.4	3.3	2.3	2.4	2.9	3.4	3.5	4.[illegible]	5.0	5.5	6.2	7.0	9.6	10.4	13.3

FIGURE 2. Time series: 1961 entry into first grade of primary followed through to university entrance in 1973

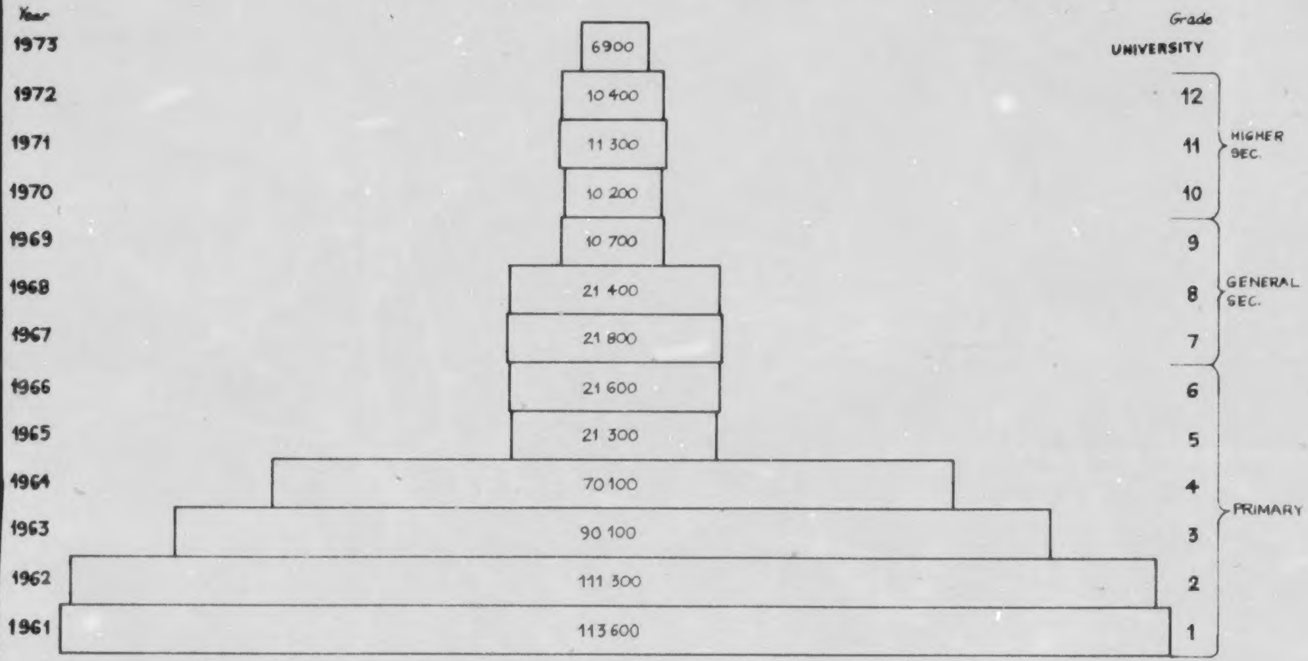

Table 21. Percentages of enrolment with respect to total population in the groups by provinces - 1970-71

Province	Primary level (age 7-12)	Junior second. level (age 13-15)	Higher second. level (age 16-18)
	%	%	%
Khartoum (	62.8	28.3	20.9
Northern (	53.7	18.3	6.5
Blue Nile (	39.4	11.4	4.0
Kassala & Red Sea (	28.6	6.0	2.3
Kordofan (	16.6	3.5	1.2
Darfur (	16.5	3.5	1.0
Equatoria (	6.8	0.8	0.2
Upper Nile (	5.7	0.3	0.2
Bahr El Ghazal (	4.5	1.0	0.7
Whole Sudan	30.5	6.6	2.4

of school population. At all levels Khartoum Province has the largest proportion; for higher secondary level it has 20.9 per cent, followed by the Northern Province with only 6.5 per cent. The disparity increases with the increase in the level of education.

At the primary level 64.2 per cent of the urban children in the age-group 7-12 went to school and 19.4 per cent of the rural children did the same in 1970-71. At the junior secondary level 41.8 per cent of the urban boys and girls of the relevant age-group (13-15) went to school. The corresponding proportion for the rural boys and girls was only 2.6 per cent.

Higher secondary education in the Sudan is all urban.

(v) Some remarks about the general education system

There is a heavy drop-out between grade 1 and grade 7 (the first year of general secondary education). Although the change from a 4-4-4 to a 6-3-3 ladder has reduced the drop-out to some extent, this change is not yet significant. The problem of primary school drop-out is of course the large-scale regression towards illiteracy which can be partially arrested by continued literacy.

The attempts made by the Teachers' Union through remedial courses to help students who fail at the general secondary level is worthy of note as an indication of the feasibility of tuition-supported evening programmes (the tuition charged is roughly the same as the annual per capita income).

The proportion of students repeating the higher secondary examination is high. Seventeen per cent of candidates in 1972-73 higher secondary examinations were repeaters. Repeating is due in part to the remedial courses offered by the Teachers' Union. The number of such students had risen in 1973-74 to 7, 300.

The high rate of repeating is a consequence of the high failure rate in the upper secondary examinations. In the period 1966-72 the success rate varied between 56 per cent in 1966-67 and 68 per cent in 1971-72. The rate fell again to 59 per cent in 1972-73. Accounting for the repeaters in the examination for the next year, approximately 4, 000 failed higher secondary students would have been looking for jobs. It is a cause for concern that no vocational training facilities exist for such students. We see such facilities as a major element in the strategy for coping with the additional demands which we expect will be made on the educational system.

Educational opportunity is available only for a small fraction of people. In 1970-71 only 19. 7 per cent of the school-going age population went to school. The situation has improved since then. Disparity among provinces is very significant. Khartoum Province has the largest share and the southern provinces the smallest share of education at all levels.

Participation of women is still little in comparison with men. The higher the level of education the less is the participation of women. The rural population has much less chance of having education than the urban population and the higher the level of education, the less the chance.

III. Development of higher education

At the time of independence, the Sudan's system of higher education consisted of the University of Khartoum, University of Cairo - Khartoum branch, the Omdurman College of Islamic Studies, the College of Fine and Applied Arts, Forest Rangers' College, Khartoum Technical Institute, Shambat Agricultural Institute, Khartoum Health College, Khartoum Nursing College and Higher Technical Institute for the Department of Construction. All these institutions had as minimum entry requirement a pass in the higher secondary school examination. One could observe that all types of institutions existed that were required for social and economic development of the country. What was needed was to develop the system according to the social and economic requirements. The institutions had a set of objectives to fulfil when they were founded ; we have noted before the objectives with which the University of Khartoum, the College of Islamic Studies and the University of Cairo - Khartoum branch, were established.

All these institutes and universities, except the University of Cairo, College of Islamic Studies and the College of Fine and Applied Arts, were established to meet the essential needs of the economy. The College of Islamic Studies was established to spread Islamic culture and philosophy of higher education; in its objectives, the employability of graduates is not given top priority.

Since independence, several other institutes have come into existence. These are the Higher Physical Education Institute for Teachers, Higher Teachers' Training Institute, Higher Technical Teachers' Training Institute and the Institute of Mechanical Engineering Technicians at Atbara. The Khartoum Technical Institute, which had only three departments at the time of independence, namely civil, mechanical and electrical engineering, added the departments of surveying and secretarial services in 1958-59 and the department of commerce in 1960-61.

The University of Khartoum also expanded rapidly. The faculty of Economic and Social Studies was created in 1958, the faculty of Engineering and Architecture in 1960, and the faculty of Pharmacy in 1963. The faculties of agriculture, arts, law, medicine, science and veterinary science already existed.

In addition, for post-graduate study and research, the Institute of African and Asian Studies was created in 1970. The Higher Teachers' Training Institute which was established in 1962 was affiliated to the university in 1973-74.

The University of Cairo, although retaining the same faculties of arts, commerce and law, expanded its enrolment manifold since independence. It had been offering courses during the evening, mainly for government employees, until 1973 when day students were first admitted. The Islamic University of Omdurman added a Department of Mathematics in 1973. The Khartoum Technical Institute has been the subject of a series of international and other inquiries since independence. Among proposals in the late sixties, there was one favouring a clear distinction between four and two-year courses (lately converted to three-year courses) with the objective that the four-year colleges become the embryo of a technical university to fill the gaps in the high-level manpower training left by the University of Khartoum. The break-up of the Polytechnic, which started in the early seventies and is due to be completed when present cohorts of students have graduated, is intended to decentralize such training. However, when difficulty was faced in the operation of some of these institutes in the regions, the decision was reversed in favour of recentralising them back to the Khartoum Technical Institute campus. At present, although most of these institutes are on the same campus, they are largely separate for administrative purposes.

Women's education found a new place in the development of the country's higher education system in the establishment of the Ahfad University College for women in 1966, offering courses in Home Economics (Bachelor of Science) and European Languages and Secretarial Studies (Bachelor of Arts).

In 1973-74, there were three universities and eighteen higher institutes and colleges under the Ministry of Education. In addition, there were seventeen other post-secondary institutions belonging to the other ministries. These are : the Military College, Police Officers' College, Prison Officers' College, Institute of Banking, Telecommunication Training Institute, X-Ray Technicians' Training Centre, Post and Telegraph Institute, Institute of Music, Drama and Folklore, Wad-el-Magboul Higher Institute and Veterinary Training Institute. All these institutes were established after independence. Our analysis will emphasize the institutions which belong to the Ministry of Education.

Students who pass the higher secondary examination in the academic streams may go to the universities (Figure 1, K), to secondary school teachers' training colleges (Figure 1, J), to higher technical institutes and colleges (Figure 1, I_3) each with a minimum duration of four years, or to three-year technical institutes (I_2), the Forest Rangers' College for two years (I_1) or to the general secondary teachers' training college for two years (H). In addition, there are 17 other institutes and colleges run by the different ministries and public corporations for the higher training of post-secondary graduates.

The first batch of graduates from the higher technical secondary schools has not yet come through. At present most of them do not know their future academic prospects except for those from the commercial schools who may proceed to the universities, subject to the entry requirements specified by the different faculties of Arts, Economics and Social Studies.

A. ADMISSION REQUIREMENTS AND TREND OF ENROLMENT

The entry requirements of each of the three universities are different. The minimum entry requirement for the University of Khartoum is a pass in the Sudan Higher Secondary School examination or in the Egyptian Secondary School examination with at least five credits, one of them in the English language. Each faculty has its own additional requirements. For admission into Islamic University one of the five credits must be in the Arabic language. The different faculties of this University also have different requirements. Entry into Cairo University, Khartoum Branch and to Ahfad University College for women needs a pass in the Sudan Higher Secondary School examination or the Egyptian Secondary School Examination.

The minimum entry requirements for the Higher Institutes of Surveying, Commercial and Financial Studies, and Higher Teacher Training Institutes are five credits. Those for the institutes of laboratory technicians, textile and weaving technicians, civil engineering and architectural technicians, mechanical and electrical engineering technicians (Khartoum), mechanical engineering technicians (Atbara), and survey technicians are three credits. The Higher Teachers' Physical Education Institute, College of Fine and Applied Arts, Shambat Institute of Agriculture, Khartoum Nursing College, and School of Hygiene require a pass in the Sudan Higher Secondary School Examination. The Forest Rangers' College requires four credits, including one in the Arabic language. Each of these institutes has its own special requirements relevant to the specialisation offered (Annex 1, page 96, lists these institutions with their detailed entry requirements).

Entry into the 17 other post-secondary institutions generally requires a pass in the higher secondary examination and depends on the number of places made available in the light of employment needs of the different Government agencies. Employability is determined by budgetary allocation for additional posts.

Enrolment in the University of Khartoum has increased during the last five years at an average annual rate of 12 per cent from 3,611 in 1968-69 to 6,359 in 1973-74. The rate for the University of Cairo for the same period is 15.6 per cent and for the Islamic University of Omdurman, the enrolment went down from 717 in 1968-69 to 609 in 1973-74. The reason for this is the change in the status of this university during this period when it was degraded to the faculty status and some courses were withdrawn. Its attention towards employability of the graduates also became a factor in reducing the enrolment. In 1969-70, intake to this university (later a faculty) was 59 as against 320 in the preceding year. Although the status has been upgraded to a university in 1973-74, the intake was restricted to 226. So far as the other higher institutes and colleges belonging at present to the Ministry of Education are concerned, analysis of development by institutes is not possible for those originally belonging to the Khartoum Polytechnic due to its fragmentation.

The Higher Teachers' Training Institute has grown in size from 380 in 1968-69 to 511 in 1973-74, i.e. at a rate of 6.1 per cent per year. The Higher Teachers' Physical Education Institute has changed in size from 40 in 1969-70 to 102 in 1973-74. This institute which started in 1969-70 had no definite pattern in its intake policy. In 1970-71, intake went down to 31, but increased to 61 in the following year, with a subsequent decrease to 33 in 1972-73. In 1973-74, there has been no intake in this institute. The Higher Technical Teachers' Training Institute established in 1971 also had a reduction in its intake from 60 in 1971-72 to 38 in 1973-74. Its enrolment in 1973-74 was 115. The Shambat Institute of Agriculture, however, increased its size from 139 in 1968-69 to 350 in 1973-74 with an average annual increase of 20 per cent.

The Khartoum Nursing College, the School of Hygiene and the Forest Rangers' College had a reduction in their size from 81, 61 and 47 respectively in 1968-69 to 61, 40 and 29 in 1973-74. The Ahfad University College for Women established in 1966 had a total of 126 students in 1973-74. The statistics on intake do not show any increasing pattern in its development since 1970-71.

The intake in the University of Khartoum increased from 598 in 1968-69 to 1,101 in 1973-74 in the faculty of Science with an average annual growth rate of 13 per cent. In the faculties of arts and economics and social studies, intake did not show any significant change. This is in accordance with the policy of the university to a target intake ratio between scientific and humanistic fields at 70:30. The faculty of law has shown an increase over the period from 13 to 32. In the further analysis of the distribution of the students of the faculty of science in the second year, the number of students who continue to remain in the same faculty has increased from 120 in 1968-69 to 206 in 1973-74. There has been a drop in the number of students enrolled in the faculty of Agriculture from 220 in 1972-73 to 205 in 1973-74, although there has been almost a threefold increase in enrolment since 1968-69. The degree of increase in the faculty of Engineering and Architecture has been less than that in Agriculture and Medicine. The latter expanding at the same rate as Agriculture. The flow into the faculty of Veterinary Science has more than doubled since 1968-69, but that of the faculty of Pharmacy has been to a lesser extent (see Table 22).

The Sudanese intake in the University of Cairo, Khartoum branch, has decreased from 1,559 in 1968-69 to 1,150 in 1973-74. The decrease has been due to the control of the Sudanese government. The faculty of Law did not have any Sudanese intake in 1973-74, as against 408 admitted in 1968-69. The peculiar characteristic in the intake pattern is the increase in the number of foreign students in the

University of Cairo in 1973-74. There were 2,540 foreign students admitted in 1973-74, against only 366 in 1968-69. As mentioned before, the restriction on the admission of Sudanese students resulted in the increase in the number of foreign students' admission. It should be noted, however, that there is a heavy drop-out from first year to second year in this university (see Table 22).

B. REGIONAL DISTRIBUTION OF STUDENTS IN POST-SECONDARY INSTITUTIONS

One objective of our study is to examine the balance of the regional distribution of the student intake in the different institutions of Higher Education. The vastness of the country and inaccessibility of some regions, due to lack of transportation facilities and absence of any higher institution in the South are the reasons for the imbalance. Although statistics for all the institutions were not available, Table 23 would give an approximate idea about the distribution for thirteen institutions in relation to the distribution of the total population according to the preliminary estimates of the latest census.

It will be observed that the northern province is the most privileged province in respect of higher education. Next in order is the Khartoum province, followed by Blue Nile and Kassala. The least privileged ones are: Bahr el Ghazal and Upper Nile. It should be noted here that the latter two are the provinces of the Southern region. Equatoria although located in the South is better off than Red Sea and Darfur in respect of its clientèle for higher education. Bahr el Ghazal has its students only in seven out of the above fourteen institutes with only one student in each of four of them. Upper Nile has its students in eleven of fourteen institutions with only one student in each of six of them. Red Sea has its students only in eight of the above-mentioned fourteen institutes. Northern province surpasses all the other provinces in all the institutions in its representation, except in the H.T.T.I., the School of Fine and Applied Arts and the University of Khartoum. In the first two, the Blue Nile province, and in the third, the Khartoum Province, have the highest representation. Any development in these institutions of higher education should take into account these imbalances and reduce them as far as possible. Some attempts have, however, been made in this respect by providing special admission requirements for them since 1969. Those Southern students, who returned recently from outside the country, were admitted with the minimum entrance requirements to the University of Khartoum, the Islamic University, the Higher Teacher Training Institute, the Higher Institute for Financial and Commercial Studies, and the Higher Institute of Surveying. The University of Cairo provides special privileges for the students of the Southern region by providing them with free education and board. There were approximately 50 completely free residential places reserved for the Southerners qualified with minimum entry requirements who do not have to compete for 'a quota of places'.

Table 22. Intake and enrolment of students for some selected institutes of higher education

Institute	Intake 1968-69	Intake 1973-74	Enrolment 1968-69	Enrolment 1973-74
Higher Teachers' Training	92	148	405	511
Higher Physical Education	-	-	40(1)	102
Shambat Inst. of Agriculture	56	127	139	350
Forest Rangers' College	47(1)	29	47	29
School of Hygiene	21	22	61	40
Khartoum Nursing College	35	21	81	61
Higher Inst. for Financial and Commercial Studies	(2)	58	-	228
Higher Technical Teachers' Training	-	38	(3)	115
Civil Eng. and Arch. Technicians	(2)	28	(3)	76
Higher Inst. of Surveying	(2)	41	(3)	103
Khartoum Inst. of Mech. and Elec. Engineering Technicians	(2)	46	(3)	93
Inst. of Mech. Eng. Technicians, Atabara	-	30	(3)	65
Inst. of Survey Technicians	(2)	25	(3)	57
Inst. of Textile and Weaving Technicians	(2)	22	(3)	64
Inst. of Laboratory Technicians	(2)	22	(3)	39
Inst. of Secretaries	(2)	25	(3)	76
College of Fine and Applied Arts	(2)	40	(3)	155
University of Khartoum (overall)	1 420	2 402	3 611	6 359
Faculty of Agriculture	77	205	247	736
Science	598	1 101	879	1 482
Engineering and Arch.	156	247	400	819
Medicine	66	206	300	788
Pharmacy	24	38	83	176
Veterinary Science	46	100	129	322
Economics	222	246	734	1 057
Arts	218	227	773	821
Law	13	32	150	158
University of Cairo, Khartoum branch	1 925	3 690	4 595	9 481
of which Sudanese	1 559	1 150		
Islamic University	320	226	717	609
Ahfad University College for Women	-	48	-	126

(1) For 1969-70.
(2) Total intake for Khartoum Polytechnic in 1968-69 was 214.
(3) Enrolment in Khartoum Polytechnic in 1968-69 was 817.

Source: Executive Office, National Council for Higher Education, and Ministry of Education.

C. DISTRIBUTION OF HIGHER EDUCATION BY SEX

The Institute of Secretarial Studies, the Khartoum Nursing College and the Ahfad University College for Women are three institutions of post-higher education in the Sudan meant for women alone. All the other institutions under the Department of Higher Education, except the Forest Rangers' College and the School of Hygiene, admit female students. The first female student in the University of Khartoum, the then Gordon Memorial College, was admitted in 1945. Since then, the number has gradually increased, although not in the same proportion as the male students. To-day, Sudan has a female student population of only about 12 per cent of the total student population in its institutions of higher education - no significant increase from the proportion in 1968-69. The H.T.T.I. with 20.8 per cent of female students was the only co-educational institution to surpass the national average. The University of Cairo had the largest number at that time with 520 female students followed by the University of Khartoum with 361 female students. Five years later they still had the largest number of female students with approximately 1,000 and 700 respectively. Increase in enrolment in the Ahfad University College has contributed to girls' higher education. A reduction in the intake of Khartoum Nursing College from 81 in 1968-69 to 71 in 1973-74 has discounted the increase in intake in other institutes from 164 to 284 during this period. The Higher Teachers' Training Institute has lost its top-most position among the co-educational institutions of higher education during the period. The proportion of girls in the University of Khartoum has remained steady during the past five years. In the Cairo University, it has slightly gone down. For these reasons, although the total number of female students has almost doubled during the past five years, the overall proportion has not changed much. As reasons for this discrepancy, it is stated that "there is no prejudice at all against admitting to any of our higher institutes but the handicap seems to be customs pertaining to the early marriage of girls especially in rural areas".[1] In recent years however, the number of married women in the higher institutions has increased. In most cases, they are wives of husbands who are highly educated and work in one of the three towns.

During the period 1947-68, the number of women graduates from the University of Khartoum was only 143, of whom only 20 were medical graduates. Since 1970-71, women were graduating from the faculties of Agriculture, Veterinary Science and Engineering for the first time.

There is a lot to be done to promote the role of women in higher education in the Sudan. The task is difficult since it involves changing the value system. More co-operation between school and home may make a dent in this. Counselling and guidance at school level may

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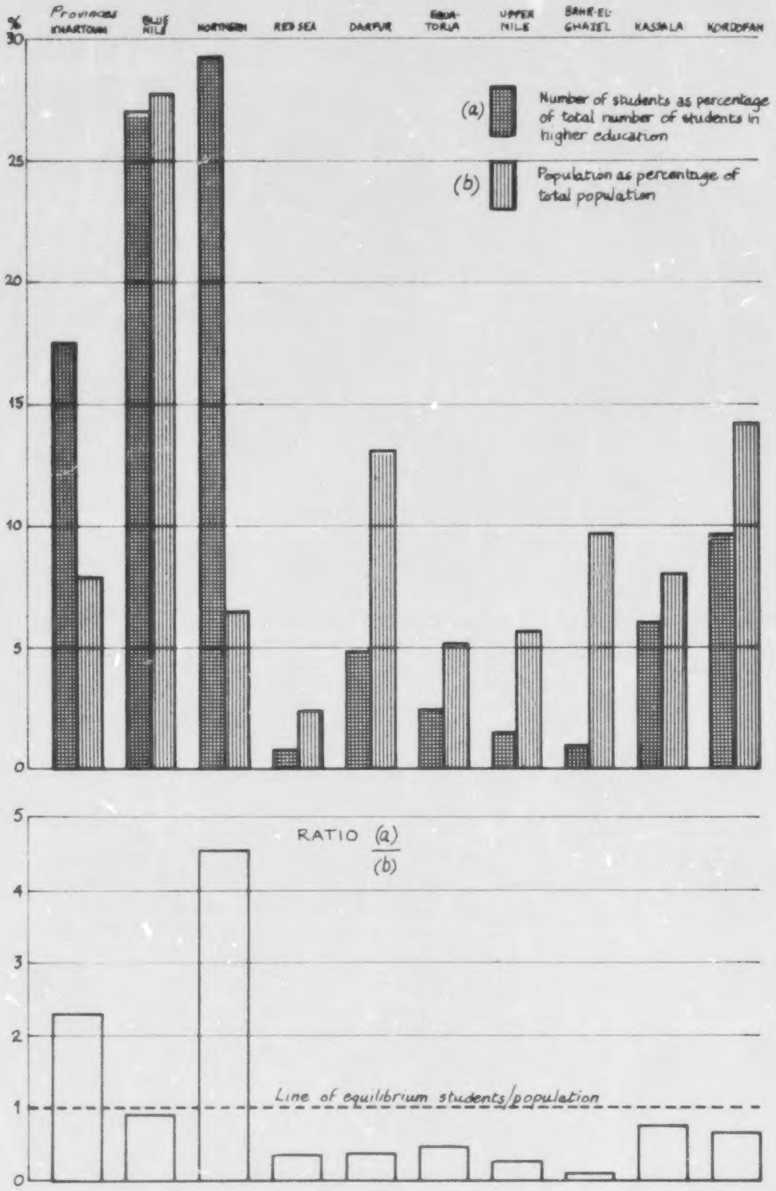
[1] Mahasin Saad, Some aspects of higher education for women in the Sudan, unpublished paper, 1969.

Table 23. Percentage distribution of students by provinces for some selected institues of higher education

	Khartoum	Blue Nile	Northern	Red Sea	Darfur	Equa-toria	Upper Nile	Bahr-el-Ghazal	Kassala	Kordofan
University of Khartoum	18.6	26.9	29.6	0.5	5.0	1.8	1.4	0.9	5.9	9.6
Higher Teachers'Training Institute	28.40	37.87	28.40	-	4.14	0.39	0.59	0.39	4.93	11.64
Higher Inst.of Com.and Financ.Stud.	15.77	13.06	25.68	-	6.31	11.71	5.86	4.95	4.95	11.71
Higher Institute of Surveying	12.08	23.08	30.77	1.10	10.99	1.10	2.20	-	7.69	10.99
College of Fine and Applied Arts	19.73	34.70	24.49	3.40	4.08	1.36	-	-	6.80	5.44
Higher Techn.Teachers'Traing.Inst.	15.56	22.22	33.33	2.96	6.67	0.74	0.74	0.74	8.96	8.15
Khartoum Polytechnic	13.43	26.12	34.33	3.73	6.72	-	0.75	-	5.97	8.89
Institute of Laboratory Techn.	23.08	17.95	38.46	5.13	2.56	2.56	-	-	5.13	5.13
Instit. of Text.and Weaving Techn.	10.94	28.13	29.69	3.13	4.69	1.56	1.56	-	9.38	10.94
Institute of Surveying Technicians	6.90	32.76	31.03	-	8.62	5.17	1.72	-	5.17	8.62
Institute of Secretariat	34.67	12.00	13.33	5.33	5.33	6.667	2.67	1.33	10.67	8.00
Civil Eng. & Archit. Tech. Inst.	17.11	21.05	26.32	-	10.52	3.95	1.32	1.32	5.26	13.16
Khartoum Inst. of Mech. & Elect.E.T.	18.28	24.73	29.03	-	4.30	4.30	1.08	-	8.60	8.60
Inst. of Mech. Eng. Tech.(Atbara)	28.36	13.43	32.84	-	2.99	5.97	-	1.49	2.99	1.49
Total (a)	17.54	26.99	29.22	0.83	4.89	2.41	1.54	0.96	5.97	9.64
% of total population (b)	7.87	27.68	6.38	2.41	13.00	5.13	5.65	9.67	8.00	14.21
(a)/(b)	2.23	0.98	4.58	0.34	0.38	0.47	0.27	0.10	0.75	0.68

Figure 3. Percentage distribution of population and of students in higher education, by province



also change the value system and bring the women of the Sudan equal status with men. One can already notice the increased role of the women in social and political decision-making of the country.

D. THE FLOW RATES INTO THE DIFFERENT INSTITUTIONS OF HIGHER EDUCATION AND FIELDS OF SPECIALISATION

Another interesting aspect of the development of higher education is the distribution of intake into different specialisations. Table 25 shows this distribution for five years. The second column gives the enrolment in the twelfth grade of higher secondary academic courses in the relevant year, the third column the number of graduates, and the following the intakes in the different fields of study.

Among the fields of specialisation, the humanities and arts, social science, law, business and commerce are essentially arts-based. The rest are science-based. It will be observed that the proportion of intake to arts-based specialisations among the higher secondary graduates is decreasing. The control applied since 1972-73 to the University of Cairo, the largest institution offering arts-based education, and to the University of Khartoum in the faculty of Arts, has resulted in this decrease. It is also observed that this control has contributed to a reduction in the total intake by about 1,700 between 1971-72 and 1972-73, whereas the number of students enrolled in the twelfth grade of the higher secondary academic courses has increased. This would imply a higher number of secondary school graduates looking for jobs. Since the University of Cairo up to 1972 was providing courses in the evening, a major part of the intake to the University of Cairo was from government employees. Up to 1972, a significant part of enrollees in that institution were not graduates of the immediately preceding year. This is why the intake to the institutions of higher education up to 1972-73 is higher than the number of graduates from the higher secondary schools. This fact should be taken into account when estimating the number of higher secondary school-leavers looking for jobs.

Table 25 does not show the intake to the faculties of medicine, pharmacy, agriculture, veterinary science and engineering of the University of Khartoum, because of the entry requirements mentioned above for these faculties. The actual flows to these faculties take place after one year of preliminary course in the faculty of science, as shown in Table 26.

It should be noted that the percentage of students continuing their studies in the second year class has increased from 85.9 per cent in 1970-71 to 92.7 per cent in 1973-74. Another interesting aspect is the control over intake in the faculty of science during the last three years. Lack of facilities for expansion in the professional faculties must be the reason for increased flow into the faculty of science lately.

The Sudan has produced until 1973, 16,955 graduates from all of its higher institutes - excluding the H.T.T.I. but including the graduates

Table 24. Number of female students in the Institutions of Higher Education under the Department of Higher Education in 1968-69 and 1973-74

Institutes or colleges	1973-74			1968-69		
	Total enrol.	Female	%	Total enrol.	Female	%
University of Khartoum	6 663(1)	700(2)	10.5	3 448	361	10.5
Khartoum Polytechnic	139(3)	5	3.6	685	74	10.8
Higher Teachers' Physical Education Inst.	102	25	24.5	-	-	-
Higher Institute of Surveying	103	0	-	-	-	-
Higher Technical Teachers' Training Inst.	115	12	10.4	-	-	-
Higher Institute of Commercial and Financ. Stud.	228	22	9.7	-	-	-
Higher Teachers' Training Institute	511	92	18.0	380	79	20.8
College of Fine and Applied Arts	155	23	14.8	-	-	-
Institute of Textile and Weaving Technicians	64	3	4.7	-	-	-
Institute of Secretariat	76	48	63.2	-	-	-
Institute of Laboratory Technicians	39	10	25.6	-	-	-
Shambat Institute of Agriculture	350	31	8.9	139	11	7.9
Civil Engineering & Architectural Techn. Inst.	76	13	17.1	-	-	-
Khartoum Nursing College	71	71	100.0	81	81	100.0
Khartoum Int. of Mech. & Elect. Engin. Techn.	93	10	10.8	-	-	-
Institute of Mechanical Engin. Techn. (Atbara)	65	0	-	-	-	-
School of Hygiene	40	3	7.5	61	0	-
Institute of Survey Technicians	57	0	-	-	-	-
Forest Rangers College	29	0	-	47	0	-
Ahfad University College for Women	126	126	100.0	40	40(2)	100.0
Islamic University of Omdurman	609	88	14.5	717	72	10.0
University of Cairo, Khartoum branch	9 481	1 000(2)	10.6	4 595	520	11.3
Total	19 192	2 282	11.9	10 193	1 168	11.5

(1) This figure includes post-graduate and other students.

(2) Estimates.

(3) Khartoum Polytechnic has since been decentralized.

Table 25. Distribution of intake by specialisation 1969-73

Years	Enrolment in 12th grad	Graduates next year	Humanit. Arts	Social Science	Law	Commerce	Teaching arts-based	Teaching science-based	(4) Science	Agricul-ture (1)	Techno-logy	Health (2)	Others arts-based	Others Science-based	Total arts-based	Total science-based	Total (5)	% Arts-based
	*	*																
1968-69	5 500	4 400	962	252	560	998	84	100	750	52	235	59	100	300	2 956	1 496	4 452	66.4
1969-70	6 200	5 200	1308	283	508	1 166	77	93	997	147	387	101	100	300	3 442	2 025	5 467	62.3
1970-71	7 000	5 100	1188	291	496	1 269	90	171	1 116	147	187	83	200	300	3 534	2 004	5 538	63.8
1971-72	9 600	4 800	584	321	55(3)	612	63	132	1 081	123	227	49	200	400	1 835	2 012	3 847	47.7
1972-73	10 400	6 900	773	270	139	883	58	128	1 161	156	214	67	300	400	2 423	2 126	4 549	53.3

* Rounded to nearest hundred.

(1) Intake to Shambat Agricultural Institute and Forest Rangers' College only

(2) Intake to Khartoum Nursing College and the School of Hygiene only

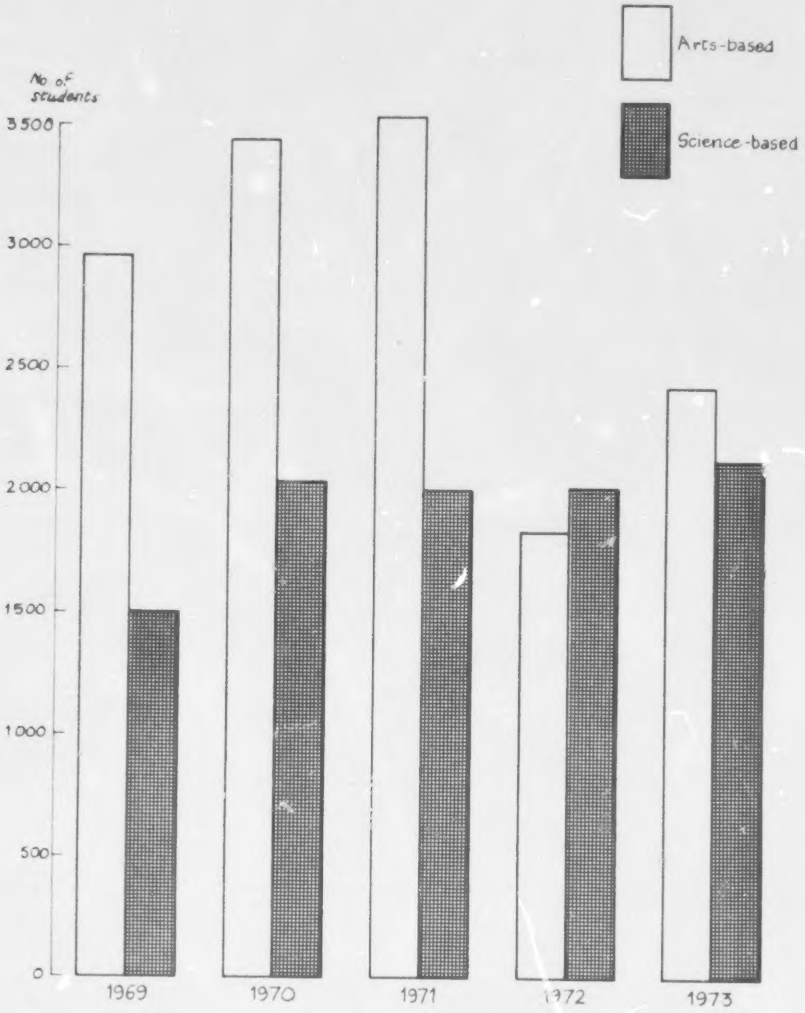
(3) No intake in the faculties of Law, in the University of Khartoum and University of Cairo, Khartoum Branch

(4) Students of the faculties of Agriculture, Science, Medicine, Pharmacy, Engineering and Veterinary Science of the University of Khartoum have their first year in the faculty of Science.

(5) Total exceeds number of graduates until 1972 (see text for reasons).

Source: Ministry of Education

FIGURE 4. Distribution of university intake by specialisation, 1969-73



of higher schools and Gordon Memorial College since 1928. If we consider the estimated number of graduates from the institutions of higher education from 1956 onwards, the number is approximately 14, 842 distributed as follows:

Institutions	No. of graduates
University of Khartoum	5 832
University of Cairo, Khartoum branch	4 226
Islamic University	1 108
Khartoum Polytechnic	2 292
Shambat Agricultural Institute	617
Khartoum Nursing College	203
Forest Rangers' College	198
School of Hygiene	366
	14 842

Among them, 9, 128[1] are art-based graduates (i.e. in arts, commerce, law and social sciences) and the rest are science-based. Of these arts-based graduates, 46 per cent are from the University of Cairo, Khartoum branch, which has only three faculties - arts, commerce and law. About 12 per cent are from the Islamic University, which has faculties of arts, Islamic studies, law and economics; 9 per cent are from Khartoum Polytechnic, and 33 per cent of the total are from the University of Khartoum. Among the science-based graduates, 25 per cent are from Khartoum Polytechnic, which has specialisation in technology, and 50 per cent are from the University of Khartoum.

E. DISTRIBUTION BETWEEN PROFESSIONAL AND SUB-PROFESSIONAL EDUCATION IN THE SYSTEM OF HIGHER EDUCATION

We shall refer back to Table 22 to show that in the Sudan, emphasis on education for sub-professionals has not been up to the mark, especially in the field of Health and Agriculture. The number of students (788) in the faculty of Medicine is higher than the number of students in the Khartoum Nursing College and the School of Hygiene combined (101). The number of students in the faculty of Agriculture (736) is more than the total number of students in Shambat Agricultural Institute and Forest Rangers' College (379). The number of students in the faculty of Engineering was, however, less than the number of students in the Khartoum Polytechnic. The situation in this field seems more satisfactory than others, looking at the past trend.

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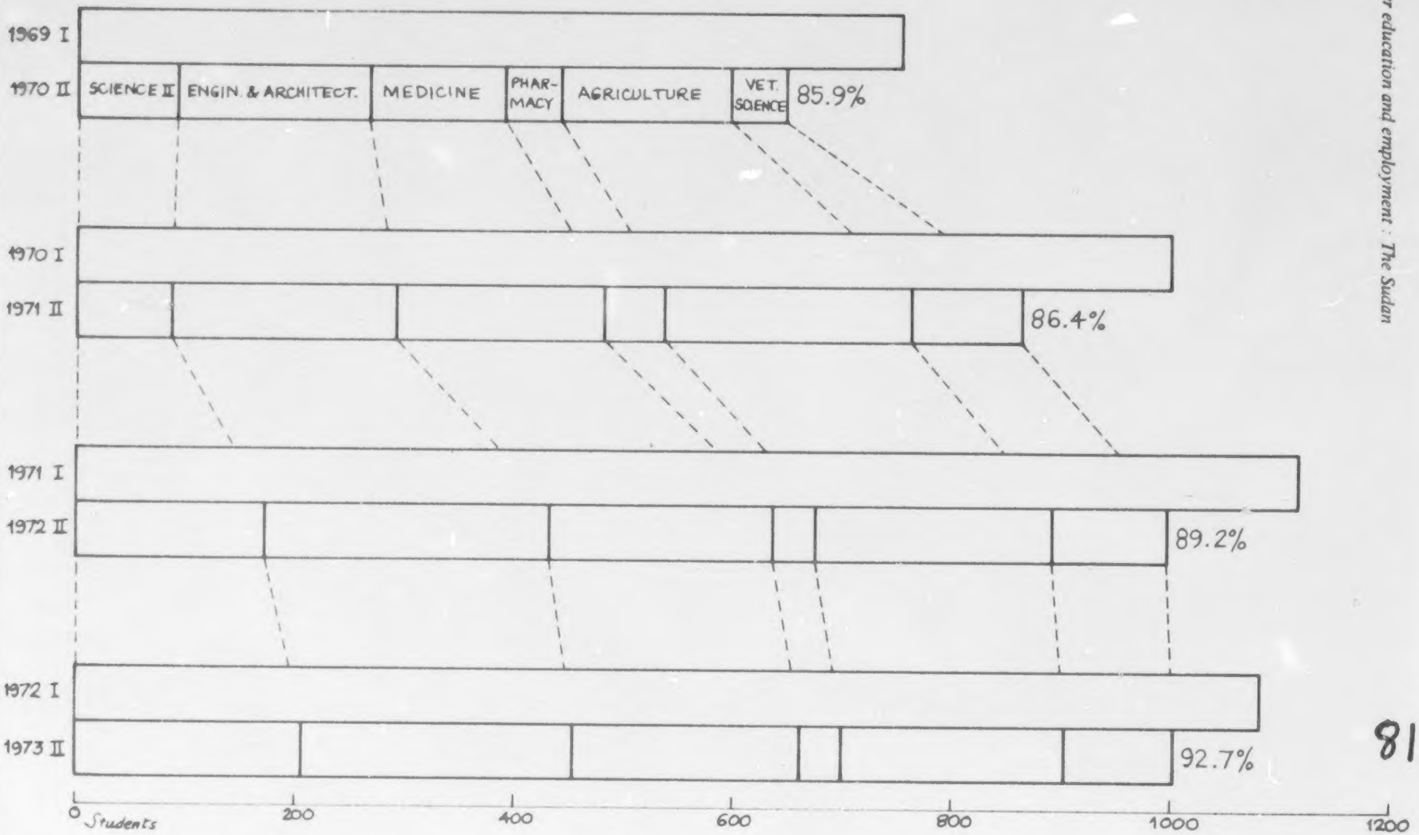
[1] Including 840 graduates from Khartoum Polytechnic in Secretarial Studies, Accounting and Fine Arts.

Table 26. Distribution of Intake by specialisations from the first year Science-class 1969-73

Year / year of study	Science		Engin. & Archit.	Medicine	Pharmacy	Agricult.	Veterin. Science	Ratios total II/ total I
	I	II	II	II	II	II	II	
1969-70	750							
1970-71	997	92	174	122	52	155	49	85.9
1971-72	1 116	86	205	191	54	225	101	86.4
1972-73	1 081	169	262	204	37	220	103	89.2
1973-74	1 161	206	247	206	38	205	100	92.7

Source: IIEP, based on Ministry of Education statistics.

FIGURE 5. Distribution of students by second-year specialisation from first-year science class, 1969-70 to 1972-73



The University of Khartoum has been responsible for the supply of most of the Engineering graduates with professional degrees. Up to 1973, 587 students have graduated from the faculty of Engineering. The technologists and technicians have been supplied by the Khartoum Polytechnic. Between 1956 and 1973, approximately 1,400 graduates have come out with Engineering diplomas. If we add Senior Trade School graduates, we have 2,230 technologists and technicians produced by the Sudanese education system, which means that there are approximately four technologists and technicians for each engineer.

But analysing critically the distribution of graduates with medical degrees and health professional diplomas, we find that there are 569 health professional diploma holders so far produced as against 752 medical and pharmacy degree holders. This shows that there is less than one sub-professional graduate for each professional graduate.

In the field of Agriculture, there are 858 agricultural diploma holders (including forestry) as against 788 agricultural professional degree holders (including veterinary science). This imbalance, if not checked and controlled immediately, may lead to serious difficulties in the near future.

F. POST-GRADUATE STUDY

Post-graduate study is restricted in the Sudan. Students have been sent abroad for higher studies. There were only 51 students at the post-graduate classes in the University of Khartoum in 1968-69. The University of Cairo, Khartoum branch, has since 1968 offered post-graduate diploma courses in Statistics and Accountancy. The number of post-graduate students in the university of Khartoum has increased to 304 in 1973-74. The Institute of African and Asian Studies has been set up to promote post-graduate studies in the University of Khartoum and is expected to contribute substantially to the target proportion of 10 per cent of the university enrolment at the post-graduate level.

G. STUDY ABROAD

As mentioned above, Sudan's post-graduate study has been heavily dependent on training abroad. Up to 1968-69, 557 students were sent abroad for higher studies and research - 513 were for higher studies and 44 for research. In 1968-69, 195 students were sent for higher studies and 23 for research. The number of students sent abroad has increased since then. In the following year, 65 students were sent abroad for research. In 1973-74, there were 555 government employees sent abroad on scholarship, or fellowship, for post-graduate studies. In addition, 4,286 students went for undergraduate education. The highest proportion went for medical training (32 per cent) and the next in order was Agriculture and Engineering (15 per cent). The striking feature is in the number of students sent abroad for training in Humanities and Social Sciences (25 per cent) when the country is already producing a larger number of graduates in these fields than it can employ. Among the government employees, the largest number (65 per cent) go abroad for doctoral and master degrees for which facilities in the country are limited; the remainder go for diploma or short-term fellowship programmes. Maximum number of such trainees (22 per cent) is sent from the Department of General Education.

Table 27 gives the distribution of students staying abroad for undergraduate training by field of specialisation and the distribution of employees by level of training to be received (in 1973-74).

The advantages of training abroad are the nominal cost to the government, and the broadness of attitude and dynamism amongst the returnees. However there are disadvantages, such as the problem of relevance of the study to the Sudanese needs, lack of available facilities in the country similar to the situation abroad, difficulty in adapting to the less comfortable life upon return, and in some specialised fields like medicine, language can cause serious communication problems.

H. FINANCING AND ECONOMICS OF HIGHER EDUCATION IN THE SUDAN

Although the exact proportion of the GNP to education in the Sudan is not known for the current year, it is estimated somewhere between 4 and 5 per cent. Exact estimation has been difficult because of the amount of self-help being put in by citizens for the development of

Table 27. Distribution of students abroad for undergraduate training and employees by level of training (1973-74)

Field of study	No. of students	%	Level of education	No. of govt. empl.	%
Humanities	506	11.9			
Education	172	4.0	Ph.D.	93	16.2
Fine Arts	53	1.2			
Social Sciences	551	12.9	Masters' degree	281	49.0
Natural Sciences	211	4.9			
Engineering	625	14.6	Diploma	167	29.1
Medical Sciences	1 356	31.6			
Agriculture	631	14.7	On Fellowship	33	5.7
Others	181	4.2			
Total	4 286	100.0		574	100.0

education. Some give money or materials, and others their labour in building a school. The government subsequently provides teachers, equipment and furniture. The village or town councils organize self-help activity. Such efforts have saved the government a lot of money. Some five thousands Sudanese students are studying in foreign universities and institutes in the current year and the cost to the government for most of them is nominal.[1] Therefore, in the case of the Sudan, the proportion of GNP to education will not be a good indicator to show the educational efforts of the country. Since the government is in almost all cases responsible (except for the University of Cairo, Khartoum branch) for the entire recurrent expenditures on education within the country, we give below the share of recurrent expenditure on education in the total recurrent expenditure on central and local governments during the period 1963/64-1970/71 and 1973/74.

Although over the past eleven years recurrent expenditure on education has increased more than threefold, overall government recurrent expenditure has increased more than fourfold reducing the proportion

Table 28. Share of recurrent expenditure on education in the total recurrent expenditure on central and local governments

Year	Recurrent expenditure on education including higher education (£S million) I	Total recurrent expenditure, central and local governments (£S million) II	%
1963/64	14.7	65.3	22.4
1964/65	13.7	72.0	19.1
1965/66	12.9	83.7	15.4
1966/67	16.1	91.3	17.6
1967/68	23.0	94.6	24.3
1968/69	23.7	116.6	20.3
1969/70	28.5	153.0	18.6
1970/71	26.2	165.3	15.8
1971/72	N.A.	N.A.	N.A.
1972/73	N.A.	N.A.	N.A.
1973/74	46.3 *	283.1 *	16.4

N.A. = not available * Budget estimates

Source: Executive Office, National Council for Higher Education.

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[1] Often families have to pay for studies in hard currency. The social costs and hidden factors cannot be identified. Moreover the University of Cairo, which at the moment is the largest single unit of higher education, is maintained entirely by the Government of Egypt.

of government recurrent expenditure on education from 22.4 per cent to 16.4 per cent during the period. Data for expenses on higher education are not separately available for past years to look at the trend of its share in the education budget, but the allocation to higher education in the overall education budget of 1973-74 is shown in Table 29.

As can be seen from the table below, primary education has the largest share of the education budget, followed by the second level (all types included - 24.4 per cent of the total government recurrent education budget). Higher education gets the least. What is striking in the table below is the amount spent on administration of the education sector. Of each 100 Sudanese pounds spent by the government on education, 21 Sudanese pounds are spent on administering the educational efforts in the headquarters for general education and provinces. It appears to be a high proportion. Administration cost to the government has generally increased over the last years, not always through need but due to the employment of graduates on the Unemployment Relief Fund. Government action already taken in this respect may reduce such costs in the near future.

I. SHARE OF THE INSTITUTIONS OF HIGHER EDUCATION IN THE RECURRENT BUDGET

Out of £S7 million estimated as recurrent expenditure for the year 1973-74, 4.7 million, i.e. 67 per cent, are allotted to the University

Table 29. Allocation to higher education in the overall education budget, 1973/74

Level of education	Recurrent budget in 1973/74 £S	%
Primary	18,254,900	39.4
Secondary general	7,141,913	15.4
Higher secondary academic	3,545,796	7.7
Higher secondary technical	601,860	1.3
Higher education (Dept. of Higher Education) all the higher institutes and colleges, University of Khartoum and Islamic University	7,074,453	15.3
Headquarters of general education and educational administration in the provinces	9,670,195	20.9
TOTAL	46,289,122	100.0

Source: Executive Office, National Council for Higher Education.

of Khartoum and 432 thousand, i.e. 6 per cent, are allocated to the Islamic University of Omdurman. Out of the remaining 1.9 million, 15 thousand went to the Ahfad University College for Women. The rest is allocated for the eighteen other higher institutes, and the administration of the Department of Higher Education. The University of Cairo, Khartoum Branch is financed entirely by the Government of the Arab Republic of Egypt, whereas the Ahfad University College for Women is run privately with government aid on a deficit basis. In this college income from the student fees amounted to £S3,351 and from rents of its own property amounted to £S3,361 for the year 1973-74. This is the only college where fees are charged at the rate of approximately £S30 per year per student. The University of Khartoum had also its own income of £S253,000, £S100,000 of which came from student fees and admission fees, £S50,000 from the university farm and £S40,000 from houserents. The remaining £S23,000 was received from interest on loans, lodging fees, trust funds, etc. Approximately 36 per cent of students receive bursaries varying from £S1 to £S3 per month in addition to their boarding fees and holiday home travel. The Islamic University's income from students through application and admission fees is also negligible.

Except for the University of Cairo, Khartoum Branch and the Ahfad University College for Women all the other institutes and universities provide free boarding for those who come from outside of the three big cities - Khartoum, Omdurman and Khartoum North. In addition, quite a number of students get their pocket money and travelling allowance during holidays from the government. This makes higher education extremely costly for the government. The University of Cairo, Khartoum branch and the Ahfad College also provide boarding facilities but for a very small fraction of the student population.

J. COST PER STUDENT

Because of the lack of accuracy of any time-series on unit costs and due to the inadequacy of statistics, we are limiting our analysis of unit costs by institutions of higher education to the most recent year. Table 30 indicates how average unit recurrent expenditure behaves in relation to the type of higher education. Several comments can be made:

1. The range of unit recurrent expenditure varies considerably among the institutions providing boarding facilities, lowest being for the Institute of Financial and Commercial Studies and the highest for the Forest Rangers' College.
2. Within the institutions also, the unit recurrent expenditure varies considerably from discipline to discipline; the faculty of Economics having the lowest and the faculty of Medicine having the largest unit recurrent expenditure in the University of Khartoum.
3. The University of Cairo costs minimum per student because of high student/teacher ratio, offering only non-science courses, having no boarding facilities and operating on minimum physical facilities.

Table 30. Approximate average recurrent expenditure per pupil, 1973/74 (£S)

Institute	Recurrent expenditure per pupil (£s)
Higher Teachers' Training	895
Higher Teachers' Physical Education	573
Shambat Agriculture	555
Forest Rangers' College	3 284
School of Hygiene	1 961
Khartoum Nursing College	1 297
Higher Instit. for Financial & Commercial studies	412
H.T.T.T.I.	1 076
Civil Eng. & Arch. Technicians'	1 373
Higher Institute of Surveying	1 077
Institute of Mech. and Electrical Engineering Technic., Khartoum	1 614
Institute of Mechanical Engin. Technicians, Atbara	1 979
Institute of Survey Technicians	614
Institute of Textile and Weaving Techn.	1 264
Institute of Laboratory Technicians	824
Institute of Secretaries	1 124
All Institutes weighted average(1)	887
University of Khartoum (overall)	736
Faculty of Agriculture	713
Science	605
Engineering & Architect.	661
Medicine	1 300
Pharmacy	834
Veter. Science	992
Economics	527
Arts	681
Law	700
University of Cairo, Khartoum Branch	74
Islamic university	720(2)
Ahfad University College for Women	210(2)

(1) Excluding Khartoum Polytechnic and College of Fine and Applied Arts.
(2) Approximate estimates.

Source: Executive Office, National Council for Higher Education.

4. The higher technical education costs more (£S887) per student than the university education on average (University of Khartoum £S736). The amount is even higher than that of the faculty of Engineering.
5. The Islamic university though offering only non-science courses costs (£S720) nearly as much as the University of Khartoum.

Cost per pupil is extremely high in some of the smallest institutes. Khartoum Nursing College costs almost the same as the Faculty of Medicine of the University of Khartoum. The School of Hygiene costs much more than either of them. Each Forest Rangers' College student costs more than four University of Khartoum students and almost four times the average cost of one higher institute student. Costs are going to increase further in the next year, when the effects of fragmentation of the original Khartoum Polytechnic will be understood fully. It became imperative that some of these institutes where courses are costly because of the need for a certain kind of highly qualified staff, be expanded according to the needs, so that per student cost decreases. Mention may be made of the School of Hygiene, which has on the roll only 40 students and costs 1 1/2 times the Faculty of Medicine per student. There is a great need for this kind of technician in the country and the government must give priority to the expansion of such training, thus ultimately reducing the cost per student. Similarly, the Forest Rangers' College programmes should be re-organized in such a way that more students can be admitted there. Expansion in some of the above institutes will definitely reduce the cost per student. Of course, one should look into the need for the skills in the economy. Some institutes should be integrated together, so as to share overhead expenses. Many of the institutes are not used to the full capacity. This results from the heavy drop-out in the first year class from the technicians' courses due to lack of career prospects. Ways must be found to make such careers attractive. Abolition of the rigid relationship between salary scales and number of successful academic years and establishment of salary scales to the needs of the economy will go a long way in solving this problem. Although social values would take time and may slow down the process, once such works are given monetary incentives, social status would follow.

Another interesting feature of Table 30 is the low cost of education for non-boarding institutions, although there are not many in the Sudan. The University of Cairo, Khartoum branch, is not a comparable case for reasons mentioned above. The Ahfad College is mostly non-boarding and its cost per student is less. Although it is difficult to compare cost per student for boarding institutions and day-institutions, the budgeted expenditure for 1973-74 shows that each student of the University of Khartoum costs approximated £S140 per year for boarding only. Such facilities are offered to students coming from outside the three towns. Under such cases, such facilities may not be withdrawn, but some economic measures may be taken to reduce the boarding cost per student. A high proportion of boarding costs go towards the salaries of the staff maintaining the boarding hostels. In the University of Khartoum, where such hostels were built on the British style, the facilities are of very high standard, compared with the normal standard of life that one might expect in the home. Looking at the overall economic situation of the country at the present moment, much economy can be achieved in the hostels by reducing some of these facilities. Self-service restaurants, involvement of students in managing and maintaining the hostels would reduce such costs. The social benefit of such self-help is also very high. Charging the students of wealthy parents for their board would also increase the revenue of the government and the university.

K. COST OF TRAINING ABROAD

As was shown in Table 27, there are 4,286 undergraduates and 325 government employees and post-graduate students studying abroad during 1973-74. Cost to the government for each undergraduate student abroad per year is very little because the host government bears the educational and incidental expenses. The government pays only pocket money in some cases. Such cost on average per student is estimated at £S34 in 1973-74. Post-graduate students who are sent abroad by the government cost much more. Such costs include travel expenses, fees and other incidental expenses. Cost for such students for the year 1973-74 is estimated at £S1, 149. The government in addition has to pay their salaries at home. Economically, although it appears sound to send students abroad, the social cost is high. Students specially at undergraduate level stay abroad for a long time. Their attitude towards life changes. They get adjusted to a well to-do society. Often, their training method is entirely different from what the Sudan can afford to utilise. The returnees are reluctant to work in the fields or areas away from the town where skills are mostly needed.

Although the foreign trained will have some attitudes and values which are congenial to the development of the country, one has to weigh the social and economic costs with the social and economic benefits for any training scheme abroad. Our discussions with some employers and foreign embassies revealed that it is preferable to have in-country training programmes conducted by foreigners with suitable counterparts for long-term courses, rather than sending them abroad. For short courses and for fields where few people are needed, training abroad may be not only necessary, but socially more useful.

L. THE SALARY STRUCTURE

It has been indicated before that the salaries of the civil servants are rigidly tied to the certificate or degree of the incumbent and the normal duration of the course leading to that degree. This has played an important role in the choice of a specialisation by secondary school-leavers. Table 31 gives the starting salary of different kinds of graduates.

Table 31. Starting salary of different kinds of graduates

Duration of the post-secondary course	Starting salary per year (£S)	Scale	
2 years	300	220/560/E.B.	530 - 1 050
3 years	340[1]	"	"
4 years	400	400-650 E.B.	695 - 1 055
5 years Honours in Arts	425	"	"
5 years (Scientific fields)	425	"	"
5 years (Engin. & Arch.)	530	"	"
6 years (Medicine)	560	"	"

These salaries do not include cost of living allowance.

[1] Shambat graduates are placed at £S340 per year.

This table explains why there is pressure from the students of the three-year institutes to extend the duration of the course to four years. It does not give the details of promotion facilities available for different types of graduates, but doctors, engineers and police officers are most preferred in this respect. Teachers progress very slowly on the promotion ladder.

M. SUMMARY OF OBSERVATIONS IN THE DEVELOPMENT OF HIGHER EDUCATION

The higher education system in the Sudan has developed in three directions: first, to meet the manpower needs of the country; second, to instill in the Sudanese religious ideals and values; and third, to increase the number of highly-qualified graduates in the country on the basis of social demand, and thereby to raise the general educational level of the population.

The University of Khartoum and the other higher institutes were involved in the first objective, the Islamic University in the second, and the University of Cairo, Khartoum branch, in the third.

In the absence of a manpower plan the expansion in the first group of institutions has taken place on the basis of intuition and guesswork. The first ten-year plan (1961-70) pointed out in general terms the needs for resources for the future economic development. It was mentioned in the plan that the country should give top priority to the development of agriculture, animal wealth and infrastructure. It did not include a manpower plan for the country. When it was felt that the number of liberal arts graduates being produced was higher than the absorptive capacity of the labour market, we hear the Vice-Chancellor of the University stating in 1969 the need for reverting the intake ratio between Science and Arts from 40:60 to 60:40 "to meet the needs of the country and requirements of economic development". It is not known if the statement was based on any analysis of requirements. The second five-year plan (1970/71-1974/75) in discussing higher education states that "... The plan aims at achieving more expansion in the realm of specialist training to meet the requirements of the national economic sectors and social services. The plan also takes full regard of the ever-increasing number of students in balance with the training ability of the educational institutes to qualify specialists - recruits of the various economic sectors". As regards the manpower plan, it has this to say : "Ministries and other governmental units in collaboration with the Ministry of Labour, have to work out a schedule of posts which need to be filled up by specialists of high and secondary qualifications. This plan of co-ordination is [illegible] be stated in the form of an agreement with the Ministry of Labour".

In summary, the five-year plan [illegible]voured manpower planning for higher education, but was unable [illegible]vance any details for that planning and recognized the need for inter-m[illegible]istry co-ordination as a logical pre-requisite for the Ministry of Education to develop operational objectives and targets. Although the three types of institutions developed in three directions, the graduates from all these types had the same objective: a better job for a higher qualification.

The high private rate of return and a system of salary structure to the number of successful years of post-secondary education and lack of job opportunities for secondary school graduates have resulted in increasing demand for higher education. Higher education has expanded manifold with very little regard to the distribution, quality and employability. The conflicting goals of the students and some of the institutions of higher education in respect of the admission policy caused the Government to introduce what was known as "Unemployment Relief Fund". In addition to the financial problem, social and administrative problems were created. The content and method of instruction, the admission policy and the financing of the University of Cairo, Khartoum Branch, being controlled by the Senate of the University of Cairo in Cairo, increased the difficulties of the Sudanese government.

This university has been the producer of the largest number of graduates in the art-based fields for which job-opportunities are limited. Questions have been raised in respect of the quality of instruction being offered. Although it is a great idea to provide opportunities for higher education for anybody who has the minimum requirement, it does good only when such education does not increase material aspiration of the recipients. In reality, it is not the case. This is why there are so many applications for promotion and upgrading of the posts of the government employees who increased their academic qualification by attending evening courses in this university. Unfortunately, the Sudan controls a smaller share of the student population pursuing higher education within the country and abroad. Out of a total student population of approximately 26,000, the

Sudanese have control on only about 10,000, who attend the University of Khartoum and other higher institutes. The remainder are controlled by foreign countries. Under these circumstances, it is difficult to have a national policy of higher education to meet the social and economic needs of the country. The control applied on the admission to the University of Cairo, and the abolition of the evening system are, for the moment, good signs. The establishment of the National Council of Higher Education with specific tasks of co-ordination, planning, allocation of resources and determination of needs of specialists for different fields of study is another good step. This Council should be strengthened with properly qualified staff.

The control, originally planned to be applied to the intake to the Arts and Science faculties of the University of Khartoum as stated in the convocation ceremony of the 1969 graduates by the University Vice-Chancellor has already been achieved and a stricter control with Science:Arts ratio at 70:30 is aimed at.

The Islamic University has also set its intake limit to 200 students, looking at the employment situation of its graduates. Its introduction of a Department of Mathematics is a move to blend religious education with practical needs. As indicated before, all these limits are based on mere guesswork and not liable to rigid following.

The Islamic University and the University of Cairo have already exceeded their quotas as revealed in their latest intake. The rapid expansion of higher education has not been able to take into account a balanced regional distribution of educational opportunities. All the institutions, except one at Atbara, are located in the three big towns of Khartoum, Khartoum North, and Omdurman - geographically one big city. Such a concentration in one city obviously creates difficulty in balanced distribution of intake, in addition to creating social and political problems. It should however be noted that boarding facilities for most of the students in the institutions of higher education have reduced imbalance in the regional distribution of intake. The planned decentralization of the Khartoum Polytechnic, later withdrawn, could contribute further to this reduction. Infrastructure of the regions is not the only factor responsible for putting an end to this project, the attitude of the faculty members who might have lost some privileges in the regions could also have contributed to this. As a result, several very small institutes with separate administrative set-ups have grown on the same campus costing much more to the government for their operation than if they had remained united.

Although the participation of women in higher education is rather recent, it has increased at the same rate in absolute numbers as men's participation during the last five years. However, the share of women is much less than the men's. Only 12 per cent of the student population are women. Customs and social beliefs have been responsible for this.

As a result of controls applied to the different institutions of higher education, the imbalance in the ratio between art-based and science-based graduates is being rectified. This step cannot be effective in the absence of manpower forecasts.

Except in the field of engineering, in all other professional fields of specialisation the supply of sub-professionals from the four-year and three-year institutes has been less than of professionals. Teacher education, especially for higher secondary school teachers, has expanded very slowly in the last five years. The proportion of qualified teachers in these schools is very little, affecting the quality of the instruction at secondary level.

The expenditure on higher education has increased during the past five years and stretched the already strained budget. This is because higher education in most cases is almost free. It is argued that students should be charged for their education either in the form of tuition fees or in the form of post-employment partial repayment of expenditures incurred. The salary structure in the past has been inconsistent with the market forces of demand and supply resulting in popularity of certain kinds of education not needed for the economic development. Development of the training of technicians slowed down as a consequence. This has also resulted in heavy drop-out in some technicians' institutes in the first year. Students leave as soon as they can get a place in the University of Cairo, Khartoum Branch, or the Police Officers' College.

Facilities for post-graduate studies in the Sudan are very limited. The University of Khartoum at the present moment can cater for only about 5 per cent of its enrolment at post-graduate level. There is also less private demand for post-graduate education as justified by lower private rate of return to such studies. The University of Khartoum is intending to increase its post-graduate enrolment to 10 per cent of the enrolment. The recent action taken by the National Council for Research in awarding research fellowships to such students may help the university in achieving this target sooner.

Foreign training has at present a very important role in the Sudanese high level manpower supply. About 5,000 Sudanese are abroad at present for higher studies. Although such education costs relatively less to the government, its relevance to the Sudanese needs may be questioned.

Facilities for career guidance and vocational counselling at the higher secondary level are almost absent, leaving the students completely in the dark about the prospects for educational careers.

The quality of training offered at the technical institutes is not satisfactory to the private sector employers, who do not hesitate to employ expatriates with higher salaries where national graduates are waiting for jobs.

Even though the Sudan's higher education system has undergone rapid expansion in the past years, the participation rate among the population of the relevant age-group is much less.

Latest statistics reveal that graduates of the University of Cairo, Khartoum Branch, have the most serious employment problem, particularly in the faculty of Commerce. The graduates of Medicine and Engineering have no difficulty in finding employment at all. The striking feature is the unemployment problem of the Khartoum Polytechnic graduates. The intake to the other post-secondary institutes controlled by the Ministries other than the Ministry of Education is decided on the basis of employability of the graduates by the Ministries - a factor which is determined by budgetary constraints. The same principle applies to the Khartoum Nursing School and the School of Hygiene.

The problem of expected number of graduates from the different institutions will be investigated in the next chapter on the basis of different assumptions to throw light on the need for better co-ordination among the institutions of higher education and the employing agencies in the future and the nature of that co-ordination.

Annex I

MINIMUM REQUIREMENTS FOR ENTRY IN THE POST-SECONDARY INSTITUTIONS IN THE SUDAN

- Higher Teachers' Physical education Institute : H.S.S.C.
- Higher Institute of Surveying: H.S.S.C., "Sc.", or Equivalent 5 C including English.
- Higher Technical Teachers' Training Institute: (P, 60 per cent) H.S.S.C., "Sc.", or Equivalent with P. in the English language.

Candidates should score three credits from either of the two groups:

Group A	Group B
Elementary Maths	Elementary Science
Additional Maths	Additional Science
	Chemistry
	Physics
	Technical Drawing

Or P, 75 per cent in Higher Secondary Technical School Certificate.

- Higher Institute of Commercial and Financial Studies : (P, 60 per cent), H.S.S.C., "Sc" or Equivalent 5 C including English language and elementary mathematics.
- Higher Teachers' Training Institute: P, H.S.S.C., 5 C including English language.
- College of Fine and Applied Arts: P, H.S.S.C., C in Art, (P, Entrance examination in drawing, painting and design. Interview before admission).
- Institute of Laboratory Technicians: P, H.S.S.C., 3 C including subjects in one of the following two groups:

Group A	Group B
Elementary Maths	Physics
Additional Maths	Chemistry
	Biology

- Institute of Textile and weaving Technicians
- Civil Engineering and Architectural Technical Institute
- Khartoum Institute of Mechanical and Electrical Engineering Technicians
- Institute of Mechanical Engineering Technicians (Atbara)
- Institute of Survey Technicians.

The following are entry requirements for all the above Institutes: P, H.S.S.C., 3 C including subjects in one of 2 groups:

Group A	Group B
Elementary Maths	Physics
Additional Maths	Chemistry

- Shambat Institute of Agriculture: P, H.S.S.C., 'Sc.' Biology
- Khartoum Nursing College: P, H.S.S.C., 'Sc.'
- School of Hygiene: P, H.S.S.C., 'Sc.'
- Forest Rangers' College: Pass in H.S.S.C., C Arabic, Maths, Geography and Physics
- Ahfad University College for Women: H.S.S.C. (Pass)
- Islamic University of Omdurman: H.S.S.C. 5 C or equivalent, with one in Arabic language and Pass in English language
- University of Cairo, Khartoum Branch: Pass in H.S.S.C., or equivalent examination
- University of Khartoum: The minimum entrance requirements for admission to the University of Khartoum are: either
  - (i) A Sudan higher secondary school certificate with at least 5 C and at least a Pass in English language obtained at one and the same examination, or
  - (ii) An Egyptian secondary school certificate with at least 60 per cent in the aggregate and at least five credits, obtained at one and the same examination including English language, or
  - (iii) Any other qualification, which the Senate of the University holds to be equivalent. Candidates may be required by the Senate to pass an entrance examination.

Abbreviations: P = Pass - H.S.S.C = Higher Secondary School Certificate - C = Credit - Sc = Science

IV. Expected number of graduates

In the previous chapter, we have noted the inconsistencies that have developed in the higher education system of the Sudan, mainly in terms of quantity. The present chapter deals with the expected number of graduates from each institution during the period 1974-80 to analyse the trend that might develop during this period. The analysis has been carried out for three alternatives arising from three assumptions about intake, to provide the basis for the vectors of development of higher education. Different combinations of alternatives for different specialisations would yield numerous other alternatives for overall development. The choice of an alternative for admission policy would be determined by the employability of the graduates based on (i) the waiting period of the graduates to find employment, (ii) the estimates of unemployed graduates based on Department of Labour statistics or scarcity of graduates based on any available information, (iii) the possible growth rate of the economy, (iv) social demand for higher education, and (v) the capacity to control and expand a particular institution.

A. METHODOLOGY OF PROJECTION

(i) The University of Khartoum

Intake in each year is followed until graduation. The proportions following the entire course of study until graduation are noted for the intake of each year. If these proportions are not widely varying, an average of the proportions between two consecutive years of study is computed and used to project the flows of enrolment in different years of study until graduation.

The intake to each of the years from 1974 onwards is based on three alternatives: (1) The first alternative is based on any expansion policy in intake the institution would like to have and/or had already adopted; (2) The second alternative is based on any deviation in the past from the desired intake with a moderate rate of such deviation; and finally (3) The third alternative is based on a faster rate of development of intake taking into consideration the social and economic aspects.

The intake up to the 1973/74 academic year having already taken place, we do not have any allowance for changes for the expected number of graduates.

It should be noted here that the intake to the Faculty of Science of the University of Khartoum takes up specialized courses from the second year. This happens for almost all the science-based faculties, i. e. medicine, veterinary science, agriculture, pharmacy and engineering. Although the Faculty of Architecture admits students in the first-year class, they are essentially engineering students and only those who remain in the second-year class in the following year are added up to the engineering students, as if the source of these students was the first-year science class. This can be clarified from the following example:

In 1968-69 there were 598 students admitted to the first-year class of the Faculty of Science and 28 students admitted to the Department of Architecture. The total intake to the science-based first-year class was 626. In the following year (1969-70) 143 students were enrolled in the second-year class of the Faculties of Engineering and Architecture; most of them are new entrants to the Faculty of Engineering from the Faculty of Science and the remaining continued their study from the first-year class of the Department of Architecture. In calculating the flow rate from the first-year science class to the second-year Faculty of Engineering, the ratio of 143 to 626 was considered. For the other science-based faculties of the University, the ratios were computed directly from the second-year enrolment (which is indeed the first year in the faculty itself) to the first-year science intake (including architecture intake).

In this University, there was an admission policy for the past which could not be rigidly followed. In choosing the three alternatives, the planned number is taken as the first one which is low. In case the University would like to follow its intake policy rigidly, they would consider this alternative. In the second alternative, a deviation has been allowed to the planned intake. This has been based on the past trend keeping in view that the University will reach its target of science: arts intake ratio at 70:30 by 1975 or 1976. In the third alternative a linear expansion has been allowed to raise the enrolment to a target number by 1976 with 1973 enrolment as the base.

From the intake in the Faculty of Science in the first year, 19 per cent continue in the same faculty specializing in natural sciences, the same proportion proceeds to specialize in agriculture and medicine, 23 per cent continue in the engineering and architecture faculty. Five per cent go to specialize in pharmacy and 8 per cent in veterinary science. The remaining 7 per cent drop out in the first year.

This distribution which has been based on past experience, present situation and the possible future development is the key element of the forecast. Once the intake is determined or selected, this distribution has been assumed to continue in the next two to three years.

In the case of the faculties of arts, economics and law, no such complication arises since the specialization is determined in the first year of admission. It should, however, be noted that this brings in rigidity on the part of the students. As mentioned in the case of the intake in the Faculty of Science, the admission to the Faculty of Arts is determined on the target ratio set by the University. It is worth noting that the total intake to the University in a year does not exceed 2, 150. Accounting for the wastage, the total enrolment will remain within the reasonable limits of the University.

(ii) The University of Cairo

We have mentioned in the previous chapter that the University of Cairo started control over its admission in 1972. The intake suddenly dropped from 2, 421 Sudanese in 1971/72 to 750 in 1972/73. The Faculty of Law has been withdrawn in the same year and the University started operating during the day. The forecast of enrolment has been based on the trend of the flow rates of the University of Khartoum since wastage before then (extremely high) is expected to drop substantially. Alternatives have been considered on the present government expectations and possible relaxation of control in view of the social and political pressure. Minimum intake has been assumed as that which was allowed in 1972 and the maximum on the basis of the trend of relaxation that has followed in 1973. Although the University intends to open new faculties in scientific fields, it has been assumed that they will not be started until 1976, so that our forecast will not drastically change.

(iii) The Islamic University

This University which used to offer humanistic, religious, legal and commercial subjects up to 1969, has been reorganised in 1973-74. It has now three faculties: Islamic and social studies, arts and science, and law. For convenience the first two faculties have been combined. Science does not yet play any important role in the faculty. The admission to Islamic University is administered at the University of Khartoum and as such, it also had its intakes planned. The actual intake has, however, differed from the planned intake. The three alternatives are based in the same way as in the cases of the humanistic faculties of the University of Khartoum.

(iv) The Ahfad University College for Women

Since it does not have any plan to check the policy of expansion, the three alternatives were based on three guesses. The first assumes the present intake very slightly increased to remain stable. The second allows a gradual linear constant increase every year and the third assumes a fast development in the near future because of the need for the type of courses being offered in the College at present in the

Sudan and also because of the fact that this is the only College which offers a certain kind of professionally-biased education (except the Nursing College) for the girls.

(v) Higher Institutes under the National Council of Higher Education (Ministry of Education) with four-year courses

The admissions to two Higher Teachers' Training Institutes, the Higher Institute for Financial and Commercial Studies, and the Higher Institute of Surveying are controlled centrally in the University of Khartoum. These institutes also had intakes forecasted on the basis of some guess-work, which had not been followed strictly. The two Higher Teachers' Training Institutes have larger capacities than the actual intake. The reason for lower intake is the less popularity of the teaching profession, due to various reasons and also the rigid admission regulations. The Home Economics Section of the Higher Teachers' Training Institute admits students every alternate year. In choosing the alternatives, these factors have been taken into account. The Higher Technical Teachers' Training Institute does not yet have any graduates. The flow rates and the graduation rates are based on those of the Higher Teachers' Training Institute.

The Higher Institutes of Surveying and, Financial and Commercial Studies, and the College of Fine and Applied Arts (admission to the latter is not administered in the University of Khartoum), have been admitting students independently since 1971/72. Before that, they were under the Khartoum Polytechnic. The output for 1974 and later has been calculated separately on the basis of the past flow rates and graduation rates. We have considered several alternative graduation/intake ratios, in addition to considering alternative intakes, because year-to-year flow rates varied significantly in the past or are not available (see Table 32).

(vi) Three-year Higher Institutes under the National Council for Higher Education

These institutes, unlike the four-year institutes, do not have their intakes planned. The trend of intake shows that they are working below capacity and there is a heavy drop-out in the first year. The reason for this has been stated elsewhere. In choosing the alternative intakes, the past trend and the expected development have been given consideration. Here also, we have considered alternative flow rates and graduation rates.

The method followed for the Shambat Institute of Agriculture, Khartoum Nursing College and the School of Hygiene is, however, the same as the older institutes, because information on the past flow rates and graduation rates was available, these institutes have retained their old method of operation. Their affiliation to the Ministry of Education is however recent.

Table 32. Graduation/intake ratio for different institutions

Institution		Ratio	Institution (1)	Ratio		
				High	Medium	Low
University of Khartoum						
Faculty of			HIS	0.80	0.70	0.60
- Arts		0.65	HICFS	0.80	0.70	0.60
- Social Sciences		0.77	CFAA	0.80	0.70	0.60
- Law		0.74	HTTI	0.83	0.83	0.83
- Agriculture		0.89	HTTTI	0.83	0.83	0.83
- Veterinary Science		0.86	HTPEI	0.83	0.83	0.83
- Engineering & Architecture		0.73	ITWT	0.80	0.70	0.60
- Medicine		0.88	IOS	0.80	0.70	0.60
- Pharmacy		0.90	ILT	0.80	0.70	0.60
			CEATI	0.80	0.70	0.60
University of Cairo			KIMEET	0.80	0.70	0.60
Faculty of			IMETA	0.80	0.70	0.60
- Arts	(up to 1975)	0.32	IST	0.80	0.70	0.60
	(1976-80)	0.65	SIA	0.64	0.64	0.64
- Law	(up to 1975)	0.51	KNC	0.72	0.72	0.72
- Commerce	(up to 1975)	0.32	SOH	0.72	0.72	0.72
	(1976-80)	0.65	FRC	0.90	0.90	0.90
Islamic University		0.76	Other post-higher secondary institutions	0.90	0.90	0.90
Ahfad College		0.75				

Source : IIEP estimates based on statistics supplied by the Ministry of Education

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(1) Abbreviations are listed on the following page.

Key to Table 32

Abbreviation	Institute
HIS	Higher Institute of Surveying
HICFS	Higher Institute of Commercial and Financial Studies
CFAA	College of Fine and Applied Arts
HTTI	Higher Teachers' Training Institute
HTTTI	Higher Technical Teachers' Training Institute
HTPEI	Higher Teachers' Physical Education Institute
ITWT	Institute of Textile and Weaving Technicians
IOS	Institute of Secretarial Studies
ILT	Institute of Laboratory Technicians
CEATI	Civil Engineering and Architectural Technicians' Institute
KIMEET	Khartoum Institute of Mechanical and Electrical Engineering Technicians
IMETA	Institute of Mechanical and Electrical Engineering Technicians, Atbara
IST	Institute of Survey Technicians
SIA	Shambat Institute of Agriculture
KNC	Khartoum Nursing College
SOH	School of Hygiene
FRC	Forest Rangers' College

(vii) The Forest Rangers' College

The only two-year institute under the National Council of Higher Education has its intake every alternate year. Keeping in view the expected development, an alternative has been considered allowing for a yearly intake. The other alternative considers a growth factor in the intake. The flow rates and graduation rates were available for past years.

(viii) Post-higher secondary institutes not under the National Council for Higher Education

In calculating the expected number of graduates from these institutes, a growth factor has been attached to the intake. These graduates do not have an employment problem since they are all admitted after their job has been assured. They are relevant to analyse the flow of the higher secondary school graduates to the system of higher education. At the time of writing, no other higher institute came into existence, although one is planned at Juba and another at Wad Medani. The expected number of graduates is not supposed to alter. In the higher alternatives of intake, this factor has been considered already.

B. EXPECTED INTAKES AND NUMBER OF GRADUATES

Tables 33 to 38 (see Annex 2, page 110) give the expected intake and the number of graduates by specialization. It should be noted here that to obtain the expected number of graduates for the year 1980, intake could be planned only up to 1976 for most of the specializations and for some of the specializations taking lesser duration, it could be estimated for later years. For the Faculty of Medicine, it was necessary to estimate the intake up to 1975, but we have added one more year so that the intake for all the institutions could be estimated at least up to 1976. The intake policy adopted in the above analysis could reduce the proportion of arts-based intake further by the choice of alternatives as adopted. In showing the total intake on different alternatives, we have added the intake on each alternative for all the specializations.

This shows that the proportion of arts-based intake with respect to total intake reduces from 0.48 to 0.46 on the high alternative, from 0.43 to 0.42 on the medium alternative, and remains stable at 0.4 on the low alternative during the three years. A different combination of the alternatives for different specializations would increase or lower this ratio. For example, if we want to achieve a lower ratio for arts-based intake we would consider the low alternative for arts-based specializations and the high alternative for science-based specializations. All these alternatives are feasible. The University of Cairo and the Islamic University contribute to the higher proportion of arts-based intake.

It should be noted here that the intake for sub-professionals is still less than expected. This is because it is not thought that any drastic measures could be taken to reverse the proportion of medical assistants, agricultural assistants or secretaries in the immediate future. To help meet manpower requirements, these are the fields in which measures should be taken.

(i) Proportion of intake with respect to successful secondary school graduates

It should also be noted that by 1976 approximately 70 per cent of the successful higher secondary academic graduates will find places in the country's institutions of higher education on the high alternative and approximately 50 per cent of the same will do so on the low alternative. The remaining will look for job opportunities. It may be noted here that this is not an alarmingly high proportion in comparison with other developing countries with similar socio-economic background.

(ii) Expected graduates (see Figure 6)

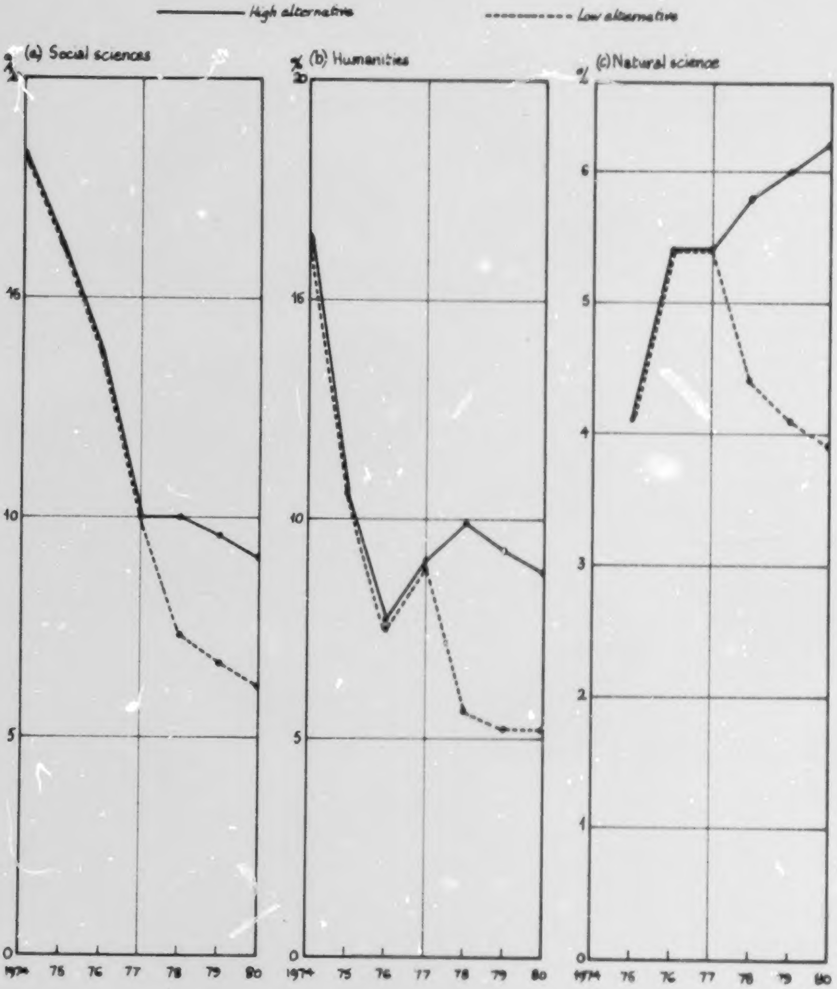
As regards the expected number of graduates, the intake up to 1973 having already been decided, expected graduates up to 1977 for some faculties and up to 1978 for certain others have already been decided also. Only changes in flow and graduation rates could alter these numbers. It appears that with the admission policy followed until now the expected number of graduates will increase on average at 7.6 per cent annually on the high alternative during 1974-80.

On the low alternative, the annual growth rate is insignificant at 0.5 per cent. This may be a desirable situation looking at the problem of unemployment of graduates today. On the medium alternative, it is approximately 4 per cent, but depending on the employment situation this growth rate may be adjusted further. It should also be noted that the Faculty of Law will produce less graduates by 1980, even on the high alternative. This is due to the suppression of the Faculty of Law of the University of Cairo. The faculties of commerce, social science and arts will have a lesser number of graduates by the same period on the low alternative. Even though the highest growth rate has been assigned to the secretaries, it is not enough for the requirements to produce a maximum of only approximately 48 secretaries yearly by 1980. It is unfortunate that the admission to the four-year or three-year institutes in the fields of health and agriculture could not be increased to the desired proportions, keeping in view the present situation and immediate possibilities. It would be desirable to pay attention immediately to rectifying this quantitative imbalance. This is discussed further in the next chapter when we discuss the manpower situation. The slow rate of growth for the faculties of arts and social science will go a long way to reduce the quantitative imbalance between the arts-based and science-based graduates at present prevailing. One thing should be remembered that we have emphasized science-based education assuming that science and mathematics instruction at the secondary level will be emphasized also. The present situation on this qualitative aspect will be discussed later. The graduation/intake ratios which are applied to the expected intakes to obtain the expected number of graduates are given in Table 32 for each institution.

(iii) Intake to post-graduate courses

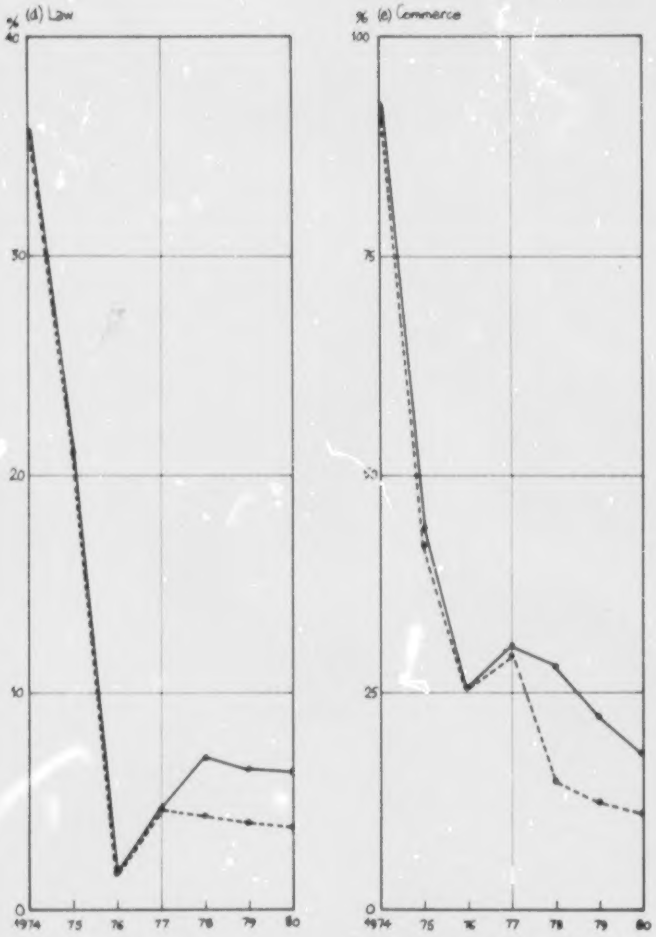
At present a small proportion of arts, social science (economics) and science graduates of the University of Khartoum proceed to higher studies. Many of them join such courses after some years of work, or as part-time students whilst working. Under such circumstances it is difficult to lay down a policy for admission to regular post-graduate courses. Lack of employment opportunities for arts graduates

FIGURE 6. Annual percentage increase in stock of graduates by specialisation for two alternatives (high and low)



[continued

FIGURE 6 (continued)



may induce them to undertake post-graduate courses only when they will have economic and social incentives. The withdrawal of the unemployment relief fund envisaged lately might change the attitude of the graduates in the near future. In the analysis of the employment of graduates an ajustment has to be made for this.

(iv) Other aspects

In the above analysis, no consideration has been given to regional distribution of intake or distribution of intake by socio-economic background. These are matters that have to follow after the number of graduates has been decided by specializations. In doing so, one can hardly ignore the employment possibilities of women in the Sudan. Although there is no prejudice against women for any kind of employment, except perhaps in military or police departments, the prevailing customs and beliefs do not encourage many women in professional activities. The most popular professions are secretarial jobs, teaching and health, and other humanistic professions. Some may argue that it is no use encouraging women's higher education, if that cannot be used for the purpose of the development of the country. Before accepting that argument, one should identify professions in which women of the Sudan could be useful and could serve the country, even with the existing customs and beliefs, and encourage women to enrol in these fields. We have identified fields where women could be useful and where there is scarcity of qualified people, namely teaching, health and secretarial professions. Priority should be given to expand the intake to these fields and women should be encouraged to enrol in these professions. Simultaneously, attention should be paid to career guidance in the secondary level, especially for women so that they do not think that higher education is needed for a girl only to get a more established husband, but that she has also a role in the development of the country and the country needs her. The staff rules for government employment also should be directed towards attracting more girls to professional employment, and therefore, to higher education.

A better regional distribution of intake to higher education could be achieved in one of two ways: to expand facilities of higher education at the regional level, or to provide a quota system for different regions (which depends on the opportunities available at lower level). If provision for secondary education is limited, intake to higher education is bound to be limited with quota on boarding facilities. The attempt of regionalising technical education has failed in the past, due partly to lack of essential facilities at the regional level. Expansion of agricultural education at the regional level with incentives for the staff at the regions is expected to contribute to a better distribution. The reason for the imbalanced distribution of education in the South is due to: (1) a different path of development it had before independence, (2) the civil war until 1971, and (3) the communication difficulties still existing between the South and the North. Establishment of quotas for the South in the institutions of higher education has not done much so far in increasing participation of the Southerners in higher education, because of the above reasons. The present plan of having a post-higher secondary institution in the South is expected to encourage such participation. It should be emphasized, however, that this institution should be biased towards education that is needed in the region. Technical, agricultural and health are the most needed fields and sub-professionals rather than professionals are the most needed categories. Any plan for development of higher education in the Sudan which does not consider these factors will create more problems rather than solve the existing ones.

Table 33. Total intake by specializations in all the institutions of post-higher secondary education (1974-76)(1)

Specialisations	1974 High	1974 Medium	1974 Low	1975 High	1975 Medium	1975 Low	1976 High	1976 Medium	1976 Low
Humanities & Arts	933	725	590	976	730	594	1 020	734	598
Social Sciences	324	302	250	342	306	250	360	310	250
Commerce and Business	1 110	800	590	1 122	811	600	1 133	819	607
Law	140	113	100	143	123	100	150	130	100
Natural Sciences	1 274	1 250	1 050	1 387	1 250	1 050	1 500	1 250	1 050
Agriculture : (a) Faculty	220	220	220	242	238	200	264	238	200
(b) Institutes	160	133	130	170	159	130	164	160	130
Veterinary Science : Faculty	93	93	93	102	100	84	111	100	84
Health Sciences : (a) Faculty	278	278	278	306	301	253	334	301	253
(b) Institutes	54	51	50	66	61	50	83	70	50
Engineering & Architecture (a) Faculty	267	267	267	293	288	240	319	288	240
(b) Institutes	45	40	35	47	42	37	50	44	39
Teacher education(2)	245	215	170	272	223	196	300	232	183
Technicians	225	192	160	257	220	184	288	242	204
Others art-based	330	315	300	363	331	300	400	348	300
Others science-based	440	420	400	484	441	400	532	463	400
(i) Total arts-based	2 919	2 327	1 887	3 037	2 375	1 909	3 163	2 418	1 916
(ii) Total science-based	3 219	3 087	2 796	3 535	3 249	2 759	3 84[illegible]	3 311	2 772
Total	6 138	5 414	4 683	6 572	5 624	4 668	7 008	5 729	4 688
(i) ÷ /‾(i) + (ii)7	.48	.43	.40	.46	.42	.41	.45	.42	.41

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(1) List of subjects under different specialisations and institutions offering courses in different specialisations is given on pages 114-115.

(2) Ratio of arts-based:science-based = 1:2

Source: IIEP estimates based on statistics supplied by the National Council for Higher Education.

Table 34. Intake to the University of Khartoum by faculty during 1973-76 on the basis of the three alternatives

Year / Faculty	1973 (Actual)	1974			1975			1976		
		High	Medium	Low	High	Medium	Low	High	Medium	Low
Science	1 161	1 274	1 250	1 050	1 387	1 250	1 050	1 500	1 250	1 050
Agriculture	205	220	220	220	242	238	200	264	238	200
Engineering & Architecture	247	267	267	267	293	288	240	319	288	240
Medicine	206	220	220	220	242	238	200	264	238	200
Pharmacy	38	58	58	58	64	63	53	69	63	53
Veterinary Science	100	93	93	93	102	100	84	111	100	84
Arts	227	251	250	200	275	250	200	300	250	200
Economics	246	264	250	200	282	250	200	300	250	200
Law	30	40	37	30	43	40	30	50	40	30

Source: IIEP estimates based on statistics supplied by the National Council for Higher Education, Sudan.

Table 35. Sudanese intake to the University of Cairo, the Islamic University and Ahfad College by faculty during 1973-76 based on the three alternatives

Institution	Faculty	1973 (Actual)	1974 High	1974 Medium	1974 Low	1975 High	1975 Medium	1975 Low	1976 High	1976 Medium	1976 Low
University of Cairo :											
	Arts	350	500	300	250	500	300	250	500	300	250
	Commerce	800	1 000	700	500	1 000	700	500	1 000	700	500
	Law	-	-	-	-	-	-	-	-	-	-
Islamic University :											
	Arts & Sc.	157	132	130	100	146	130	100	160	130	100
	Law	70	100	76	70	100	83	70	100	90	70
Ahfad University (1) College for Women		48	60	52	50	60	56	50	60	60	50

(1) Arts-based:science-based ratio = 1:1

Source: IIEP estimates based on statistics supplied by the National Council for Higher Education, Sudan.

Table 36. Intake to the higher institutes and colleges under the National Council for Higher Education

Intake Institute	1974			1975			1976			1977			1978		
	High	Medium	Low	High	Medium	Low	High	Medium	Low	High	Medium	Low	High	Medium	Low
Higher Inst.of Surveying	45	40	35	47	42	37	50	44	39						
Higher Inst.of Commercial and Financial Studies	70	65	60	75	70	65	80	74	68						
College of Fine and Applied Art	50	45	40	55	50	44	60	54	48						
Higher Teachers'Physical Education Institute	40	30	20	45	34	23	50	38	25						
Higher Technical Teachers' Training Institute	40	35	30	45	39	33	50	44	38						
Higher Teachers' Training Institute (1)	165	150	120	182	150	140	200	150	120						
Institute of Textile and Weaving Technicians (2)	40	35	30	47	41	35	53	45	39	60	51	44			
Inst. of Secretar. Studies	40	35	30	47	41	35	53	45	39	60	51	44			
Inst. of Laborat. Techn.(3)	25	20	15	30	24	18	35	28	21	40	32	24			
Shambat Inst. of Agricult.	140	133	130	140	139	130	144	140	130	150	140	130			
Civil Engineering and Arch. Technicians' Inst.	40	35	30	43	38	33	47	41	36	50	44	39			
Khartoum Nursing College	25	25	25	30	30	25	40	35	25	50	40	25			
Khartoum Inst. of Mechanical and Electr. Eng. Techn.	50	40	30	57	46	35	63	50	38	70	56	42			
Inst. of Mech. and Elect. Engin. Techn. (Atbara)	40	35	30	47	41	35	53	45	39	60	51	44			
School of Hygiene	29	26	25	36	25	31	43	35	25	50	40	25			
Inst. of Survey Technic.	30	27	25	33	30	28	37	33	31	40	36	33			
Forest Rangers' College (4)	20	-	-	30	20	20	20	20	-	40	20	20	20	20	-

(1) Arts/Science ratio : 1:2

(2) All institutions having a three-year course have their intake shown up to 1977 to facilitate estimation of expected number of graduates up to 1980.

(3) Institute of Laboratory Technicians was having intake in alternative years so far. The practice is assumed to be dropped from 1974 onwards in view of the emerging needs.

(4) The Forest Rangers' College at present admits students in alternate years. One of the assumptions is that the practice will continue so that there will not be any intake in 1974, but intake will increase to 40 by 1977. The other assumption is that 20 students will be admitted every year.

Source: IIEP estimates based on statistics supplied by the National Council for Higher Education

Table 37. Intake to other post-higher secondary institutes during 1974-76

		Art-based	Science-based
1974	High	330	440
	Medium	315	420
	Low	300	400
1975	High	363	484
	Medium	331	441
	Low	300	400
1976	High	400	532
	Medium	348	463
	Low	300	400

Source: IIEP estimates based on statistics applied by the National Council for Higher Education, Sudan.

List of subjects under different specializations and institutions offering them

Institutions

Natural Sciences

- Biological science
- Premedicine
- Chemistry
- Earth Science
- Physics
- Other Physical Sciences
- Mathematics

University of Khartoum

Engineering

- Chemical
- Civil
- Electrical
- Industrial
- Mechanical
- Mining

University of Khartoum
Higher Institute of Surveying
Institute of Textile & Weaving Technicians
Khartoum Institute of Mechanical & Electrical Engineering Technicians
Institute of Mechanical and Electrical Engineering Technicians, Atbaru
Institute of Survey Technicians
Civil Engineering & Architectural Technicians' Institute

Social Sciences - Economics (including Home Economics) - History - Political science - Psychology - Sociology and anthropology - Geography	University of Khartoum Ahfad University College for Women
Humanities & Arts - Arabic - English and Journalism - Fine Arts - Foreign Languages - Philosophy - Religion	University of Khartoum University of Cairo (Khartoum) Islamic University College of Fine and Applied Arts
Health - Pharmacy (Nursing for women) - Medicine	University of Khartoum, Faculty Medicine and Pharmacy Khartoum Nursing College School of Hygiene
Commerce & Business - Commerce - Finance & Accounting - Secretarial Studies	University of Cairo (Khartoum) Institute of Commercial and Financial Studies Institute of Secretarial Studies
Teacher education	Higher Teachers' Training Institute Higher Technical Teachers' Training Institute Higher Teacher Physical Education Institute
Agriculture	University of Khartoum Faculty of Agriculture Shambat Institute of Agriculture Forest Rangers' College
Veterinary Science	University of Khartoum Faculty of Veterinary Science
Other arts-based and science-based fields (not under Ministry of Education)	Military College Police Officers' College Prison Officers' College Communications Training Institute Veterinary Training Institute Sudan Airways' Training Institute

Table 38. Expected number of graduates by specialization (1974-80) on alternative admission policies and graduate/intake ratios

	1974			1975			1976			1977			1978		
	High	Medium	Low	High	Medium	Low	High	Medium	Low	High	Medium	Low	High	Medium	Low
Humanities & Arts	635	633	631	507	506	504	427	424	420	527	523	519	628	489	393
Social Sciences	243	243	243	258	258	258	261	261	261	225	226	226	248	232	192
Commerce & Business															
- professional	498	496	494	432	429	426	389	385	379	566	561	556	706	501	381
- secretarial	8	7	6	41	39	34	20	18	15	32	25	18	38	28	21
Law	258	258	258	214	214	214	42	42	42	75	75	75	106	85	75
Agriculture															
- professional	122	122	122	187	187	187	184	184	184	174	174	174	187	187	187
- sub-professional	77	77	77	105	105	105	99	99	81	117	103	101	108	107	83
Veterinary Science	41	41	41	83	83	83	81	81	81	86	86	86	80	80	80
Natural Science	22	22	22	76	76	76	97	97	97	103	103	103	113	111	93
Health sciences															
- professional	133	133	133	152	152	152	204	204	204	225	225	225	233	233	233
- sub-professional	37	37	37	19	19	19	31	31	31	39	37	36	48	44	36
Engineering & architecture															
- professional	124	124	124	158	158	158	196	196	196	180	180	180	195	195	195
- sub-professional	24	23	22	12	11	11	25	24	23	33	29	25	36	28	21
Technicians	97	92	87	120	102	101	139	121	104	180	134	96	206	151	111
Teacher education	133	132	131	183	181	178	168	166	163	165	165	156	203	179	142
Other art-based	90	90	90	180	180	180	180	180	180	270	270	270	297	284	270
Other science-based	270	270	270	270	270	270	360	360	360	360	360	360	396	378	360
TOTAL	2812	2800	2788	2997	2970	2956	2903	2873	2821	3358	3276	3208	3828	3312	2853

Table 38. (cont'd)

	1979			1980			TOTAL		
	High	Medium	Low	High	Medium	Low	High	Medium	Low
Humanities & Arts	659	492	395	690	486	421	4 073	3 553	3 283
Social Sciences	262	235	192	276	238	192	1 774	1 693	1 564
Commerce & Business									
- professional	710	504	364	714	507	366	4 015	3 383	2 946
- secretarial	42	32	23	48	36	26	229	185	143
Law	108	93	75	113	98	75	916	865	814
Agriculture									
- professional	206	202	170	224	202	170	1 284	1 258	1 194
- sub-professional	128	108	101	114	108	83	748	707	631
Veterinary science	88	86	72	95	86	72	554	543	515
Natural science	123	111	93	134	111	93	668	631	577
Health sciences									
- professional	252	251	242	275	266	224	1 474	1 464	1 413
- sub-professional	60	50	36	72	58	36	306	276	231
Engineering & architecture									
- professional	214	210	175	232	210	175	1 299	1 273	1 203
- sub-professional	38	29	22	40	31	23	208	175	147
Technicians	230	171	123	256	189	134	1 228	960	756
Teacher education	225	185	162	250	194	153	1 327	1 202	1 085
Other Arts-based	327	298	270	360	313	270	1 704	1 615	1 530
Other Science-based	436	397	360	479	417	360	2 571	2 452	2 340
TOTAL	4108	3454	2875	4372	3550	2873	24 378	22 235	20 372

Source: IIEP estimates based on statistics supplied by the Ministry of Education, Sudan.

V. Analysis of the manpower situation

In the previous chapter we have examined the alternative strategies for admission to different institutions of higher education in the Sudan by specialization, keeping in view the social demand, resource constraints and employability of the graduates. In this chapter we shall examine the manpower requirements for the social and economic development of the country by specialization. The objective is to analyse how far the expected number of graduates will make it possible to meet such requirements at least in quantitative terms, or what are the employment prospects of the graduates that will be turned out on the basis of the intake policies outlined in the last chapter.

In assessing the manpower requirements of the Sudan, one has difficulty in estimating the education-occupation matrix and the occupation-economic sector matrix because they are not yet available. The only data that we have are related to highly-qualified people and these are available in the Scientific and Technical Potential Survey carried out in 1973.

A. SOME CHARACTERISTICS OF THE HIGHLY-QUALIFIED MANPOWER IN THE SUDAN

The highly-qualified manpower of the Sudan can be characterized by the level of education, specialization, sector of performance, sex, regions served, nationality and economic sector. We shall consider them one by one as follows.

(i) Level of education

Among the highly-qualified manpower totalling 11,463 (see Table 42), only 234 (i.e. two per cent) are secondary school graduates who have more than 15 years of experience and have qualified themselves equivalent to post-secondary level in their occupational career. Most of them are employed in the public sector enterprises. Such a small magnitude reflects the rigidity of the system of career possibilities in the Sudan. The largest proportion (72.7 per cent) of highly-qualified manpower has a university degree or a post-graduate degree or diploma. Most of them are employed in the government sector. Only one in four of highly-qualified manpower has a post-secondary diploma which is considered just below the university degree. This is in coherence with the pattern of development of higher education followed so far in the Sudan.

(ii) Specialization

Table 39 shows that the humanities group has the largest share of the labour market (30.1 per cent) followed by engineering (16.6 per cent) and natural science (11.0 per cent). The striking fact is the low proportion of personnel qualified in teacher training and education (0.1 per cent). It appears that many of the graduates of the Higher Teacher Training Institute have been omitted from the survey. The proportion in veterinary science is also insignificant in comparison with the need for such specialists in the Sudan for the development of livestock.

The development of the economy in the Sudan has been greatly slowed down by this shortage of veterinary scientists and agriculturists. The large number of personnel with humanities specialization is the result of the absence of a production-oriented higher education policy in the Sudan during the last decade. Most of these employees are absorbed into the government sector.

(iii) Sector of performance

The nationalization measures undertaken by the government during 1970 have reduced the rôle of the private sector in the economy of the Sudan. The organizations served by the highly-qualified manpower of the country have been classified into four categories by the Scientific and Technical Potential Survey mentioned before. These categories are: (i) government, (ii) public sector corporations, (iii) institutions of higher education, and (iv) the private and foreign enterprises. Among them the government is the largest employer with 84.1 per cent of the employees followed by the institutions of higher education (7.8 per cent) and the public enterprises (7.3 per cent). The private and foreign enterprises employ less than one per cent of the highly-qualified personnel (see Table 40).

It should be noted that humanities graduates are the largest proportion employed by all the organizational sectors. Engineering is the next largest specialization group employed by the government sector and private and foreign enterprises, commerce for the public sector corporations (the result of the nationalization of banks and other commercial enterprises), and natural science for the institutions of higher education. Agriculture and veterinary science combined occupy the sixth position in the government and in the institutions of higher education,

Table 39. Distribution of employees by specialisation and level of education (all sectors)

Specialisation \ Level of education	Secondary	Post secondary	University	Higher education	Undefined	All levels
Natural science	0	154	878	230	0	1 262 (11.0)
Engineering	6	1 181	489	224	0	1 900 (16.6)
Social science	0	63	917	218	0	1 198 (10.5)
Humanities	221	479	2 506	241	0	3 447 (30.1)
Education and Teacher training	0	10	2	0	0	12 (0.1)
Medical	0	533	426	232	1	1 192 (10.4)
Veterinary science	0	3	248	72	0	323 (2.8)
Agriculture	0	295	337	154	0	786 (6.9)
Commerce	7	91	430	10	0	538 (4.7)
Law	0	1	639	44	0	684 (6.0)
Others and undefined	0	57	32	5	27	121 (1.1)
Total	234	2 867	6 904	1 430	28	11 463
%	(2.0)	(25.0)	(60.2)	(12.5)	(0.2)	

Source: Based on the Scientific and Technical Potential Survey, Vol.I, National Council for Research, Dem. Rep. of Sudan , 1974.

Table 40. Distribution of employees by specialisation and sector of performance

Specialisation \ Sector of performance	Government	Public enterprises	Higher education	Private and foreign	Total
Natural science	1 085 (11.3)	16 (1.9)	157 (17.5)	4 (4.5)	1 262 (11.0)
Engineering	1 614 (16.7)	140 (16.7)	128 (14.3)	18 (20.5)	1 900 (16.6)
Social science	994 (10.3)	94 (11.2)	106 (11.8)	4 (4.5)	1 198 (10.5)
Humanities and Arts	2 960 (30.7)	226 (27.0)	220 (24.6)	41 (46.6)	3 447 (30.1)
Education and Teacher training	11 (0.1)	1 (0.1)	0 (0)	0 (0)	12 (0.1)
Medical	1 069 (11.1)	3 (0.4)	120 (13.4)	0 (0)	1 192 (10.4)
Veterinary science	269 (2.8)	2 (0.2)	51 (5.7)	1 (1.1)	323 (2.8)
Agriculture	581 (6.0)	148 (17.7)	51 (5.7)	6 (6.8)	786 (6.9)
Commerce	343 (3.6)	180 (21.5)	5 (0.6)	10 (11.4)	538 (4.7)
Law	639 (6.6)	19 (2.3)	25 (2.8)	1 (1.1)	684 (6.0)
Others and undefined	78 (0.8)	8 (1.0)	32 (3.6)	3 (3.4)	121 (1.1)
Total	9 643 (84.1)	837 (7.3)	895 (7.8)	88 (0.8)	11 463 (100.0)

* Figures in parentheses are percentages with respect to the column total.

Source: IIEP estimates based on the Survey of Scientific and Technical Potential (STP), Vol. I, National Council for Research, January 1974.

third in the public sector enterprises, and fourth position in the private and foreign enterprises. Education and teacher-training graduates are employed in the secondary schools, mostly controlled by the government. Of the government employees, 11.1 per cent have specialization in medical and related subjects. The corresponding proportion of the employees in the institutions of higher education is 13.4 per cent. Most of the medical graduates are employed in the government sector and self-employment plays an insignificant rôle.

(iv) Employment by sex

We have discussed before the rôle of women in higher education in the Sudan. It was noted that women are lagging far behind men as regards participation in higher education. In the case of employment the situation is much worse. Out of 11,463 employees traced in the survey, only 615, i.e. 5.4 per cent, are female.

A large part of this total (33 per cent) is specialized in medical sciences, mostly nursing. Humanities and arts graduates take the next largest share (28 per cent), followed by social science graduates (14.5 per cent). The striking fact is that only 6.3 per cent of employed women have specialization in commercial subjects, which includes secretarial studies. This is much too few in comparison with the need.

The problem of employment of women in the labour market for highly-qualified people has its roots in the social customs and beliefs of the country, as is the case for opportunities of higher education for women. The rôle of the government can be specified in providing special service rules for women, opening up of employment opportunities in areas attractive to women, e.g. teaching, health and secretarial services: this requires a simultaneous effort in changing some of the traditional social customs which impede development and should be done through career guidance and counselling to urge the resourceful women of the country to participate in the development of the country. So far, such attempts have not been made with the required seriousness and urgency.

(v) Regions of employment

The most striking feature of the distribution of highly-qualified personnel by regions of employment is that a substantial proportion (30.2 per cent) lived outside the Sudan at the time of the survey. A little more detailed investigation shows that most of them (98.6 per cent) work in the government sector. They are abroad, most probably, for higher training on the government payroll, or working for the Ministry of External Affairs. We have discussed the implications of training abroad in earlier chapters. It is not understood how the Government of the Sudan is able to afford to have so many of its personnel staying abroad.

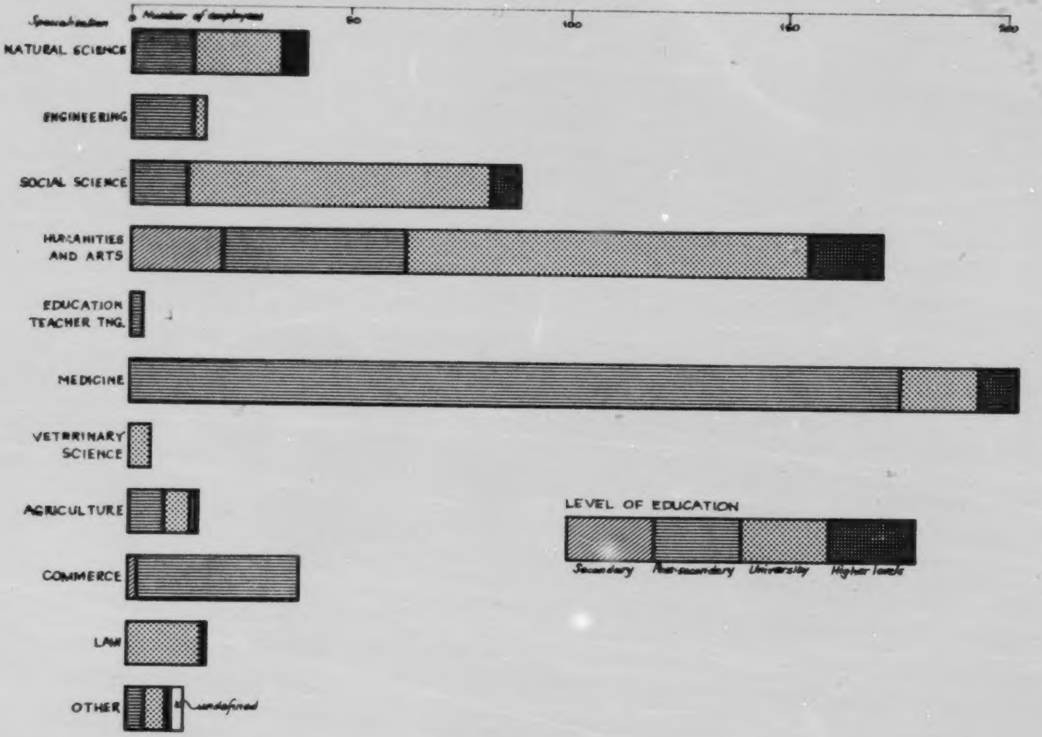
As far as employment within the country is concerned, it is observed

Table 41. Distribution of female employees by specialisation and level of education

Level of education / Specialisation	Secondary	Post secondary	University	Higher levels	Undefined	Total	%
Natural science	0	14	20	6	0	40	6.5
Engineering	0	14	3	0	0	17	2.8
Social science	0	13	69	7	0	89	14.5
Humanities and Arts	21	42	92	17	0	172	28.0
Education and teacher training	0	3	0	0	0	3	0.5
Medical	0	176	18	9	0	203	33.0
Veterinary science	0	0	5	0	0	5	0.8
Agriculture	0	8	6	2	0	16	2.6
Commerce	2	37	0	0	0	39	6.3
Law	0	0	17	1	0	18	2.9
Others	0	4	4	1	0	9	1.5
Undefined	0	0	1	0	3	4	0.6
Total	23	311	235	43	3	615	100.0

Ibid.

Figure 7 Distribution of female employees by level of education and specialisation



Source: Table 41.

from Table 42 that Khartoum Province has the largest share of personnel (43.9 per cent of the total) with the largest share of specialists in all fields except agriculture, where the Blue Nile Province has a small edge over Khartoum Province because of the Sudan Gezira Board. This again shows the concentration of qualified manpower in one province which embraces the three big towns of Khartoum, Khartoum North and Omdurman. The three provinces of the south employ only 1.8 per cent of the total highly-qualified personnel. This also demonstrates that not only the productive facilities but also the service facilities, such as medical, commercial, etc. are distributed unequally among the different provinces. This regional disparity has to be rectified for a balanced development of the country. It should not be forgotten also than an employment strategy can be successful only when the educational strategy is oriented towards regional development. Until now, regional consideration has not been given any significant importance in the educational development, as discussed in the earlier chapters.

(vi) Employment by nationality

The Sudan has very few foreigners in its highly-qualified labour market. This is due to its long history of educational policy, unlike other African countries. The nationalization policy of 1970 has also played a rôle in this. The Scientific and Technical Potential Survey reveals that only 309 out of 11,463 (i.e. 2.7 per cent) personnel are foreigners. Among them, 153 (i.e. 49.5 per cent) are from other Arab countries. If we analyse the distribution of these foreigners, it is observed that a substantial part of them have specialization in humanities and natural science. They are mostly engaged in the teaching profession and research. A national employment policy could identify where expatriates are needed and where localization could be enhanced easily. Humanities and arts as areas of specialization do not need to have expatriates in the Sudan, whereas fields such as agriculture, natural science and engineering could be strengthened with highly-qualified expatriates.

(vii) Employment by economic sector

The Scientific and Technical Potential Survey does not identify the personnel by economic sector. The distribution by economic sector was estimated from the distribution by department or organization in which they served at the time of the survey. Such distribution plays an important rôle in estimating the requirements for manpower by specialization for a future point in time based on the growth of the different sectors. Consideration of such differences becomes possible only when the distribution of the current stock of qualified personnel is known by the different economic sectors.

It should be noted that although the agricultural sector has the largest contribution to gross domestic product (about 41 per cent), it absorbs

Table 42. Distribution of employees by specialisation and province of employment

Specialisation \ Province	Khartoum	Northern	Blue Nile	Kordofan	Kassala	Darfour	Equatoria	Bahr el ghazal	Upper Nile	Elsewhere	Total
Natural science	476	43	105	17	44	9	0	1	0	567	1 262
Engineering	836	161	336	56	156	12	18	17	8	300	1 900
Social science	851	40	49	15	33	17	1	6	8	178	1 198
Humanities and Arts	1 177	160	225	76	151	55	9	15	8	1 571	3 447
Education and Teacher training	7	2	1	0	1	0	0	0	0	1	12
Medical	569	46	108	50	64	26	12	14	9	294	1 192
Veterinary science	149	12	28	23	19	22	4	10	7	49	323
Agriculture	207	40	212	36	139	16	15	20	12	89	786
Commerce	416	25	13	7	22	3	0	1	0	51	538
Law	281	8	7	12	12	3	1	0	1	359	684
Others	45	16	12	9	5	0	1	0	0	1	89
Undefined	18	2	1	0	1	0	0	6	2	2	32
Total	5 032	555	1 097	301	647	163	61	90	55	3 462	11 463
%	43.9	4.8	9.6	2.6	5.6	1.4	0.5	0.8	0.5	30.2	

Source: Based on the Scientific and Technical Potential Survey, op. cit.

only 13 per cent of highly-qualified manpower (see Table 43); 43.4 per cent of them have specialization in agriculture, 27.9 per cent in engineering, and 17.9 per cent in veterinary science. The employment of a significant number of engineers in the field of agriculture demonstrates that this sector is to some extent mechanized. Even then the Sudan's vast agricultural area (more than 30,000 million hectares) needs many more qualified people than are at present employed. The number employed with specialization in veterinary science (323) is appallingly small in comparison with the vast livestock of 35 million heads.

The mining, manufacturing and construction sectors employ only 3.8 per cent of the highly-qualified personnel. The largest specialization group is obviously engineering (with 43.4 per cent), followed by natural science (28.3 per cent). Personnel with specialization in social science also forms a large group with 15.4 per cent of the total highly-qualified manpower in these sectors. The overall picture reflects that the Sudan's manufacturing sector (including mining and construction), which contributes about 14 per cent to the GDP, needs much more development effort. The sector representing commerce and hotels, although contributing more than 10 per cent to the GDP, has only 2.1 per cent - the smallest share of highly-qualified people. The nature of this sector however does not need too many specialized personnel. Even then, to keep pace with the demand for increasing business activity, more trained people could be needed in the near future.

The transport and communications sector also employs a very low proportion of highly-qualified manpower. We have mentioned earlier that this sector is of key importance to the balanced development of the country's economy. Shortage of qualified personnel in this sector creates a serious bottleneck in the overall development.

The largest proportion of highly-qualified people (68.1 per cent) are employed in the services sector. The majority of them are specialized in humanities and medical science. The employment of humanities graduates in the services sector has not always been according to the needs of the country. The government's policy of guaranteed employment for graduates played an important rôle in this. Although medical graduates form a substantially strong group amongst the highly-qualified people in the services sector, we shall see soon that the number is far below the needs of the country. The reason for the low figure of people employed in the services sector with specialization in education and teacher training has already been discussed.

B. EMPLOYMENT OF GRADUATES AND CHOICE OF ADMISSION POLICY

The above analysis demonstrates that there is a considerable amount of inconsistency in the structure of the highly-qualified labour force in the Sudan. To choose an admission policy one has to assess the manpower requirements by specialization in the country and the degree of employability of the graduates. The quantitative matching of the different

Table 43. Distribution of personnel by economic sector and specialisation

Specialisation \ Sector	Agriculture	Mining, manufacturing and construction	Commerce and hotels	Transport and communications	Finance and real estate	Services	Others
Natural science	85	125	47	42	13	940	10
Engineering	422	192	28	412	78	701	67
Social science	49	68	57	33	152	829	10
Humanities	15	20	63	22	215	3 059	53
Medical	0	2	0	0	3	1 182	5
Veterinary science	271	0	0	0	0	52	0
Agriculture	656	9	0	0	61	60	0
Law	6	2	8	10	29	625	4
Commerce	8	21	30	28	169	240	42
Education and Teacher training	0	0	0	0	0	12	0
Others	1	3	4	0	8	105	0
Total	1 513	442	237	547	728	7 805	191
%	13.2	3.8	2.1	4.8	6.3	68.1	1.7

Ibid.

fields of study to the Sudanese needs is discussed in the following sections and an admission policy is recommended for each field of specialization.

(i) Agriculture

Due to insufficient development of agricultural education, the yield of most of the crops and livestock in the Sudan is below normal standard. According to studies made by the United Nations and the World Bank, it is estimated that one professional agriculturalist is needed for every 12,500 hectares of irrigated land and one for every 25,000 hectares of non-irrigated land. Again, each professional agriculturist should be assisted by three agricultural technicians and ten skilled labourers. In 1972-73 the distribution of total area of main crops by type of irrigation was approximately as follows:

Type of irrigation	Area in million hectares
Organized irrigation	4.5
Rain-fed	23.2
Flood	2.3
Total	30.0

Following the above norms, the need for agriculturalists in 1972-73 can be assessed as follows:

	Irrigated	Non-irrigated	Total
Professional	360	1,020	1,380
Sub-professional	1,080	3,060	4,140
Skilled workers	3,600	10,200	13,800

In the same year there were only 786 agriculturalists available. Among them, 295 were sub-professionals and 491 professionals. This means that the country was running its agricultural sector with only 35 per cent of the professionals and only seven per cent of the sub-professionals actually needed.

In the case of veterinary science, it is estimated that to serve 10,000 head of cattle, one veterinary science graduate and five middle-level technicians are needed in the Sudanese situation. The Sudan's cattle are estimated at 13.1 million in 1972-73. The number of veterinary science graduates needed to serve these cattle alone would be 1,310 and the corresponding number of technicians would be 6,550. In 1973 there were 301 veterinary science graduates and 22 technicians, which is far below the requirement. This still leaves the sheep, goat and camel population without any specialized care. Referring to Table 38 in the previous chapter we note that based on the highest alternative on intake policy there could be 1,838 professionals and 748 sub-professionals graduating in fields of agriculture, veterinary science and forestry in the Sudan during 1974-80.

The total number of professionals needed, on the basis of the estimates given above, even in the present situation, is much higher than what could be available by 1980. This calls for rapid expansion in the field of higher education as early as possible, based on the regional needs. In 1972-73, the cattle population alone for the three southern provinces was estimated at 5.2 million, with very little provision for their care.

(ii) Medicine

In 1973, the Sudan had a total medical manpower of 1,192, of whom 533 had received post-secondary training, and 294 were living abroad. The distribution of these medical graduates by province, compared with the distribution of population according to the preliminary estimates of the 1973 census, is shown in Table 44.

This table demonstrates the wide disparity that exists among different provinces in respect of medical services. Even if we assume that the post-secondary graduates are available to give medical care, independent of a medical doctor, the population per medical professional and sub-professional varies from 1,956 in Khartoum to 88,778 in the province of Upper Nile. Assuming that those employees staying abroad are doing so on a temporary basis for training purposes, the Sudan has approximately one medical professional or sub-professional for every 11,577 people. If we consider medical professionals alone, the population per doctor increases to 21,000 approximately. Referring to the estimates of expected number of graduates with education in health sciences, the high estimate yields an additional number of 1,474 medical professionals by 1980. Added to this, the present stock that we have yields a total of 2,133 medical doctors - unadjusted for death, retirement or emigration - which would reduce the population per doctor in the whole of the Sudan to 7,637, a satisfactory number in comparison with international standards. If we consider the low alternative and discount the total expected stock by 1980 at two per cent per year for death, retirement and withdrawals during the next seven-year period, then the population per doctor in the whole country will be 8,521 approximately - still a reasonable number. This will not solve the problem however if they are not distributed proportionally in the provinces. Measures must be taken to reduce the appalling disparity that exists among the provinces.

As regards sub-professionals such as medical assistants, it is normal that for each doctor there are at least three assistants. If this would be the case then by 1980 the Sudan should have at least 5,736 medical assistants. However, it appears that this possibility is remote. According to our expectations, the total number of medical assistants by 1980, on the basis of the high alternative, will be approximately 839 unadjusted for wastage.

Any effort to expand medical education in the Sudan should be directed immediately to sub-professional education and to the regional distribution

Table 44. Distribution of medical science graduates by province of employment and population of province

Province (1)	Population in millions (2)	Medical professionals (3)	Medical sub-professionals (4)	Total (3) + (4) (5)	(2)/(3)	(2)/(5)
Khartoum	1.113	285	284	569	3 905	1 956
Northern	0.902	9	37	46	100 222	19 609
Blue Nile	3.914	37	71	108	105 783	36 241
Kordofan	2.010	18	32	50	111 667	40 200
Kassala	1.131	19	45	64	59 526	17 672
Darfour	1.839	2	24	26	919 500	70 731
Equatoria	0.725	6	6	12	120 833	60 417
Bahr el Ghazal	1.367	2	12	14	683 500	97 643
Upper Nile	0.799	2	7	9	399 500	88 778
Abroad	-	279	15	294		
TOTAL	13.8	659	533	1 192	20 941	11 577

Source : Based on the STP Survey and the preliminary 1973 census estimates supplied by the Department of Statistics of both professionals and sub-professionals. This can be achieved by distributing facilities for such education among the regions and by providing special incentives for them in the outlying provinces.

(iii) Teacher education

The Scientific and Technical Potential Survey does not give us the full stock of personnel trained in teacher training, particularly the graduates from the higher teacher training institutes which train teachers for higher secondary schools. Seven hundred and thirteen students have graduated from these institutes during the period from 1964-65 to 1972-73. Assuming that the bonding system works efficiently to retain these graduates in their profession, a two per cent wastage per year will reduce this number to 653 in 1973.

The number of students in the higher secondary academic stream in 1973-74 was 43,126 in the public and nationally subsidized schools. This means that there were 66 students per trained teacher in 1973 in the higher-secondary schools. The estimated entry to higher-secondary schools in 1977-78, 1978-79, 1979-80 will be 22,850, 23,[illegible]00 and 25,000 respectively, according to the Ministry of Education estimates. Assuming a drop-out rate of five per cent between two subsequent grades, the total enrolment in 1980 will be 68,000 approximately, with 40 students per teacher; the number of trained teachers needed in 1980 will be 1,700. The total stock of teachers with a two per cent wastage per year will be 1,826 in 1980 on the basis of the high alternative, 1,702 on the medium and 1,589 on the low alternative. If the number of students expected to enrol in the higher secondary school is correct, then the usual development of teacher education as indicated in the intake policy will improve the teaching quality of the higher-secondary schools to a reasonable extent.

(iv) Engineering and technical education

There were 713 engineering professionals in 1973. With a wastage of two per cent per year, the stock in 1980 on the high alternative will be 1,851, and on the low alternative 1,754. This shows an average annual growth rate of 14.6 per cent for the high alternative and 13.7 per cent for the low alternative. Until now there has not been any problem of employment of engineering graduates, although average annual increase has been higher in the past. It would however be advisable to accept the admission strategy with the low alternative, because the absorption capacity of the economy may not increase even to the extent of 13.7 per cent per year.

In the case of the technicians, the phenomenon is one of shortage in comparison with the international standard. There will be 2,399 technologists and technicians in 1980 with an annual wastage rate of two per cent on the high alternative. On the low alternative the number of sub-professionals will be approximately 1,910. The average annual growth rate varies from seven per cent to 10.6 per cent based on the choice of admission policy. The number of sub-professionals for each professional will vary from 1.08 to 1.30, depending on the alternative. This is obviously far below the usual norm of three sub-professionals for each professional. In quantitative terms it would be advisable to accept the high alternative for admission policy to technical institutes, even at the cost of reduction in intake to the Faculty of Engineering, if necessary, because of the latter's already high growth rate per year.

(v) Natural science

In natural science, acceptance of the high alternative of the admission policy and two per cent wastage per year of graduates would yield a stock of 1,733 by 1980. This means that the average annual increase will be 4.4 per cent per year (see Table 45), with an increasing trend from 1973-74 at 4.1 per cent to 1979-80 at 6.2 per cent. Consideration of the science/arts intake ratio, economic needs and stronger absorption capacity of the labour market for science-based graduates, and finally possible flow of natural science graduates to post-graduate courses, leads us to accept the high alternative for admission policy.

Table 45. Expected stock in 1980 by field of specialization based on high and low alternatives and average annual growth rate during 1973-80

	Expected stock in 1980			Average annual growth rate (%) 1973-80		
Specialisation	High	Medium	Low	High	Medium	Low
Humanities and arts	6 842	6 358	6 068	10.2	9.1	8.4
Social science	2 713	2 633	2 506	12.4	11.9	11.1
Commerce and business	4 490	3 848	3 393	35.0	32.0	30.0
Law	1 446	1 395	1 345	11.3	10.7	10.2
Natural science	1 706	1 669	1 617	4.4	4.1	3.6

(vi) Humanities and arts

We have noted before that the graduates specialized in humanities and arts formed the largest group among unemployed graduates in the Sudan. This fact alone leads us to recommend the low alternative for the admission policy of the institutions of higher education. This would result in an average annual growth of qualified manpower in this area of 8.4 per cent (see Table 45). In 1973-74 the growth rate will be 16.3 per cent decreasing gradually to nearly five per cent in 1979-80. It should be noted that graduates for the period 1974-77 are predetermined due to their being in the pipeline already. This is the reason for the higher annual increase in the earlier years. Flow of arts graduates to post-graduate courses will reduce the growth rate of such specialists further.

(vii) Commerce

The second largest group of unemployed graduates in the Sudan is formed by the commerce graduates. This is largely due to the turnout in the past of the University of Cairo which used to offer evening classes and a large number of government employees enrolled to obtain a higher degree for career purposes. The admission policy on the basis of the low alternative will reduce annual increase to 11 per cent by 1980. The average annual growth during the period 1973-80 is 30 per cent due to the very high rate of growth in the early years of this period (see Table 45). It appears that only drastic measures could reduce the problem of unemployment of graduates in the immediate future. By 1980 the situation will however improve to a great extent if the intake policy, as outlined in the previous chapters, is followed.

(viii) Social science

In this field the total stock of qualified manpower by 1980 will be 2,713 with the high alternative and 2,506 with the low alternative of the admission policy. This means an average annual growth rate of 12.4 per cent in the former and 11.1 per cent in the latter case during the period 1973-80, ignoring the flow of these graduates to post-graduate courses.

The annual increase decreases from 18.3 per cent during the period 1973-74 to 9.1 per cent during the period 1979-80 on the basis of the high alternative. On the basis of the low alternative the annual increase during 1979-80 is 6.1 per cent.

Due to the unemployment problem already existing in this field and the impossibility of a very high increase in absorptive capacity of the economy, we would recommend the low alternative for the admission policy, even though part of the graduates will delay their arrival to the labour market to have a post-graduate diploma or degree.

(ix) Law

In the case of law graduates, the stock will increase from 684 in 1973 to 1,446 with the high alternative and to 1,345 with the low alternative in 1980. This means an average annual growth rate of 11.3 per cent and 10.2 per cent respectively. Here also the annual increase decreases from 35.7 per cent during 1973-74 to 6.3 per cent in 1979-80 on the high alternative and to 3.8 per cent on the low alternative.

In this field also one should start with the low alternative for the admission policy. If the employment situation improves, one could then shift to the medium or high alternative.

(x) Other arts- and science-based specializations

Since admission to institutions offering courses in such specializations is restricted by the employability of the graduates, a conservative admission policy was assumed for these fields. The expected number of graduates available for jobs during 1974-80 with the usual assumption of wastage (i.e. two per cent per year) will be 4,070 on the high alternative. Most of these courses being occupation-oriented and admission being decided by the number of vacancies available, the employment problem remains at minimum level.

(xi) Some comments on the assessment of manpower needs and the employment of graduates

The problem of employment in the Sudan is not only regional but structural. Wide regional disparity exists not only in production-oriented employment but also in service-oriented employment. What can the higher education system do to rectify these disparities and imbalances? The admission policy outlined in the previous chapter and the analysis of the employment opportunities in the different fields of study dealt with in this chapter, show how the quantitative inconsistencies can be minimized. Instead of specifying a single value, several alternatives have been considered to yield a range of values for intake to different specializations so that the decision-maker can change the choice of the alternative when circumstances would require him to do so.

In the choice of alternatives discussed above we have considered the employment possibilities and scarcity of the graduates. We have not however been able to go far in reducing the structural imbalances because of resource and policy constraints prevailing at present and expected to prevail in the immediate future. Our main objective, to orient admission policy to employment needs up to 1980, is a constraint. But under the changing circumstances it would not be desirable either to have a longer target period. We have indicated the directions in which corrective measures have to be taken in order to minimize the structural imbalances. Continuous monitoring and adjustment have to be built into the planning process to achieve the specified goals. An admission policy cannot be implemented if it cannot foresee the aspirations of the students, employers and the society as a whole. It is with this objective in mind that we have intervened in the labour market and the higher education system to find out the factors which determine these aspirations. To minimize the structural imbalances it is necessary to find out what factors have been responsible for such imbalances. In the previous chapter we have identified some of the reasons which could be submitted for quantitative analysis. To minimize the regional imbalances also, it is necessary to identify the causes. We have identified some of them which could be identified through published and available evidence. So far we have not dealt with the attitudinal aspects of the different clientèle in order to identify the causes of the imbalances which are not quantifiable. This was done, as explained in the methodology of the research in Chapter I, by means of the attitude surveys. Discussion of the results of these surveys is the subject of the next chapter.

VI. Higher education and employment: an analysis of the opinions of students, graduates and employers

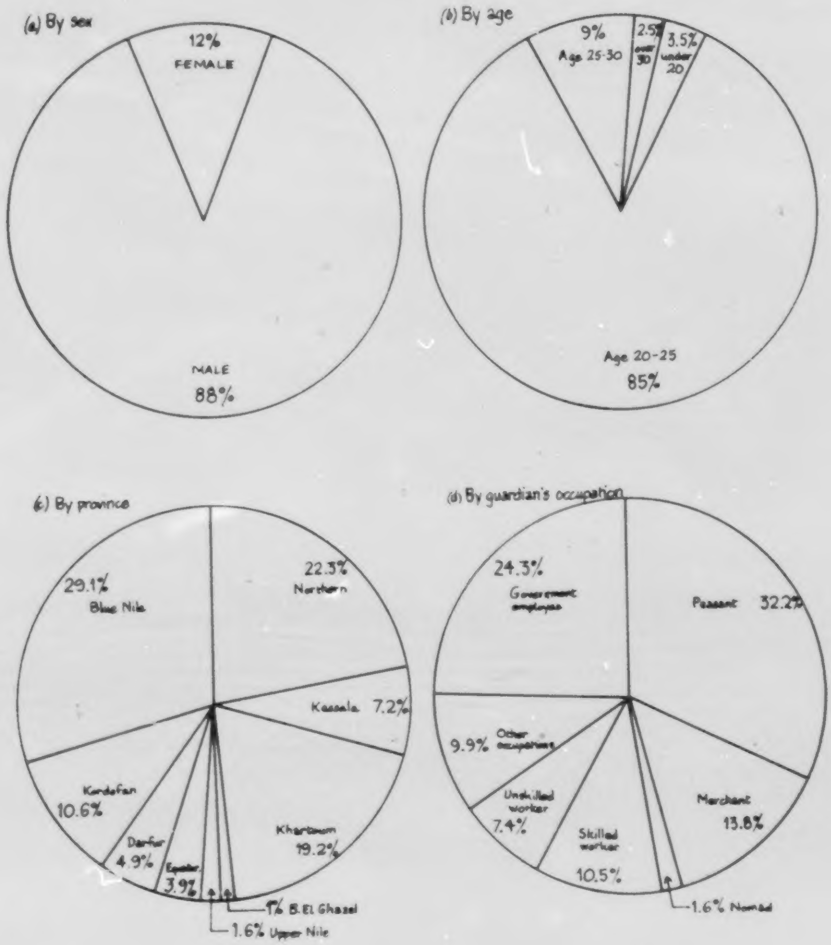
With the objective of identifying the factors which would contribute to reduce any qualitative mismatch between the higher education system and the labour market and to analyze their inter-relationship, an investigation was carried out as follows:

The attitude of the students towards the higher education system and their expectations about the labour market have been analyzed through a survey conducted among 500 students of post-higher secondary institutions. The attitude of the graduates towards the higher education system they had followed in the past, their expectations about the labour market and the real situation as perceived by them, have been analyzed through a similar survey conducted among 376 graduates of post-higher secondary institutions. The expectations of the employers, their recruitment policy and their prospective role in the development of higher education in the country have been the subject of a third survey conducted among 51 employers in the country. The results are discussed in the following sections.

1. THE STUDENTS - THE HIGHER EDUCATION SYSTEM AND THE LABOUR MARKET

We have mentioned before that to formulate a development plan for higher education it is important to diagnose the variables that relate the students to the higher education system and the labour market. The factors that determine the demand for higher education, the role of career guidance in the choice of an educational career, the popularity of fields of study, difficulties in pursuing the desired course, the degree of satisfaction with the available course of study, the relevance of the secondary school curriculum, sources of finance for higher education, and expectations in respect of employment are the important variables in such an inter-relationship. Each of these aspects is discussed below on the basis of the students' responses.

FIGURE 8. Distribution of students responding to questionnaire



A. FACTORS DETERMINING THE DEMAND FOR HIGHER EDUCATION

Table A.I in the Appendix shows that 64.33 per cent of the students undertook post-secondary education in order to acquire a particular qualification for career reasons. Only 23.47 per cent of the students continue their studies after completion of secondary education for its own sake. The lack of employment opportunities for secondary graduates encouraged only 5.54 per cent of them to pursue their studies further. In other words, 5.54 per cent of the students would have accepted a job if they were able to find one after their secondary education. The response is more or less consistent in all the sub-classes of the students considered. There are, however, some interesting and significant deviations from the normal trend in certain classes of students. For example, it is noticed that a higher percentage of students whose guardians belong to the higher income group indicate that they are continuing their studies at post-secondary level for its own sake. As Table A.I shows, while 22.47 per cent of the students from the lower income group (less than £S250) continue their study for its own sake, the percentage is as high as 38.24 per cent in the case of students belonging to the higher income group (more than £S1,000). In the overall sample, this figure is 23.47 per cent. The preference for town life encouraged only 3.33 per cent of the students surveyed to continue their studies after completion of secondary graduation.

The female students' responses however differ considerably from those of the male students. While 33.12 per cent of the male students pursue their studies for career reasons, only 14.75 per cent of the female students do so. About 43 per cent of the female students indicated that they are continuing their studies beyond post-secondary level for its own sake, while the corresponding figure is only 20.73 per cent for the male students. Most of the students from the southern provinces continue their post-secondary education to acquire a particular qualification.

B. THE ROLE OF CAREER GUIDANCE IN THE CHOICE OF EDUCATIONAL CAREER

The proper choice of the field of study by the students according to the demands of the society, the labour market and their personal capabilities, aptitudes and interests is important, not only for the individuals concerned, but also for the future of their country as a whole. Hence, the necessity of having sources of adequate and authentic advice, and career information for the students cannot be over-emphasized. The present study has analyzed the extent and reliability of the advice received by the students regarding the choice of their field of study.

The analysis revealed the following facts: 29.4 per cent of the students felt that the advice which they received pertaining to the question of choice of field was very satisfactory; 26.4 per cent of the students did not get any sort of advice from any source and 22 per cent of them got advice which finally proved to be unsatisfactory. The result of the analysis is consistent in all sub-classes considered. There are, however, some significant differences in certain cases. For example, it is seen that the students getting satisfactory advice is highest in percentage for Khartoum Province (43.62 per cent). The next highest figure occurs in the case of Northern Province (32.11 per cent). For Blue Nile, the corresponding figure is 28.88 per cent.

Also, in the sub-classes based on the occupation of the guardians, it is seen that the percentage of the students getting satisfactory career advice is least for the wards of the peasants and the unskilled workers (25.64 per cent and 25 per cent respectively). It is highest for the wards of the skilled workers (35.29 per cent) and those of the government employees (32.20 per cent). The details of the results concerning the degree of satisfaction and the extent of the advice received by the students are given in Table A.II in the Appendix.

The main sources of career information for the students are: (i) their parents, relatives and friends, (ii) general information sources, e.g. journals, radio, newspapers, (iii) university or faculty employment service office, (iv) university staff, etc.

The relative importance of these sources may be seen from Table A.III in the Appendix.

The table shows that the majority of the students depend on the advice of their parents, relatives and friends (22.54 per cent). Students who get their career information through employment in the fields concerned represent 20.38 per cent. The general information sources viz. newspapers, journals, radio, etc. provided career information to 21.20 per cent of the students. The other important sources are university staff and university or faculty employment office. 13.86 per cent of the students received career advice from the university staff and 11.69 per cent received the same from the university or faculty employment bureau.

C. DESIRED SPECIALIZATION

The distribution of the students according to their desired specialization (Table A.IV) indicates that medical science and engineering are the most popular professions among the students. 23.40 per cent of the students under survey wanted to take 'health profession' as their career after completion of their secondary education. 21.60 per cent of the students chose the engineering faculty. Among the other professions, 9.4 per cent of the students desired to accept the teaching profession, 7.8 per cent wanted to be natural scientists and only 4.8 per cent expressed their willingness to undertake agricultural studies.

The two professions - medical and engineering - are more popular among the students who received career information than among the students who did not receive the same. 24.72 per cent of the students who got career information desired to study engineering, the corresponding figure in the case of students deprived of career information being 17.91 per cent. The percentage distribution of students according to their desired profession varies in accordance with the profession and income of the guardians of the students as well.

Thus agriculture is seen to be most popular among the wards of the peasants; business and commerce among the wards of the merchants and social science among the students whose guardians are government employees.

The desired profession varies according to the sex of the students as well. The engineering profession is not at all popular with girls. While 23.28 per cent of the male students wanted to choose this profession after their secondary level, only 7.27 per cent of the female students wanted to do so. Social science and medical science are equally popular among the female students. While 23.64 per cent of the girls wanted to study social science after the completion of their secondary graduation, only 6.91 per cent of the boys expressed their willingness to choose the subject.

The relevant figures are shown in Table A.IV in the Appendix.

D. REASONS FOR BEING UNABLE TO FOLLOW THE DESIRED EDUCATIONAL CAREER

There is, however, always a gap between the desires and achievements. For a good many reasons, all the students could not take the courses leading to their desired professions. The predominating factors responsible for compelling the students to shift from their desired fields are as follows: (1) Admission regulation; (2) Financial reasons; (3) Unexpected family reasons (e.g. death, change of residence, etc.); (4) Personal reasons; and (5) Shift of interest after receiving more career information, etc.

The analysis has revealed that 24.63 per cent of the students could not choose their fields of study according to their personal desires for admission regulations. The competition on the basis of previous academic records, viz. the marks obtained in the preceding examinations, is perhaps partly responsible for the inability of these students to obtain admission to their desired fields.

Due to their adverse financial conditions 23.12 per cent of the students were deprived of the opportunity of studying in their desired fields. The percentage of the students who could not choose their desired profession for financial reasons, however, depended on their guardian's income range. Thus, 28.57 per cent of the wards of the people with an income of less than £S250 could not take the courses leading to their desired profession, whereas the corresponding figure is only 8.33 per cent in the case of the wards of people earning more than £S1,000.

21.32 per cent of the students did not follow their desired profession for personal reasons and 10.51 per cent had to abandon their desired fields for unexpected family reasons.

Only 9.61 per cent of the students could not choose their desired profession because their guardians wanted otherwise. The guardians' wishes were respected more in the case of female than of male students. While 31.06 per cent of the girls shifted from their desired field owing to their guardians' wishes, the corresponding figure is seen to be only 8.39 per cent in the case of the boys.

The details of the analysis pertaining to the question of students' shift from their desired professional courses are given in Table A.V in the Appendix.

E. DEGREE OF SATISFACTION WITH THE PRESENT SPECIALIZATION

The students were asked about the degree of satisfaction with their present faculties. The analysis yields the following results: 49.20 per cent of the students find their present faculties 'satisfactory'; 25.20 per cent 'fairly satisfactory', 21.80 per cent 'unsatisfactory' and 3.80 per cent did not express any opinion whatsoever. The results are given in Table A.VI in the Appendix.

The percentage distribution does not differ considerably from one class of students to the other. However, there are some interesting points that demand discussion.

Table A.VI in the Appendix shows that the female students seem to be more satisfied with their present faculties. 66.6 per cent find that their present faculties are satisfactory and 17.57 per cent find them fairly satisfactory. In the case of the male students, the corresponding percentages are 46.76 per cent and 26.39 per cent respectively. While 23.15 per cent of the male students feel that their present faculties are 'unsatisfactory', only 12.28 per cent of the female students do so.

It is also seen that the students belonging to the higher age-group are more satisfied with their present faculties than those belonging to the lower age-group. Of the students of the age-group ranging from 25-30 years, 58.70 per cent indicate that their faculties are satisfactory for them, whereas in the case of students belonging to the age-group ranging from 20-25 years, the corresponding percentage is 47.87. As regards students below 20 years, the corresponding percentage is 47.06.

Another apparently curious fact is observed when one analyzes the responses of the students grouping them in two classes according to whether or not they received any career information and advice before choosing their present faculties. It is seen that so far as their satisfaction with the present faculties is concerned the students who received career information and those who did not receive the same are almost similarly placed. Absence of an organisational structure for career guidance may be responsible for this phenomenon.

About 50 per cent of the students who had the 'privilege' of receiving career information and advice are satisfied with their present faculties. Almost the same figure (48.29 per cent) appears in the case of students who did not receive any such career information. In the former case, 26.42 per cent of the students are moderately satisfied and 20.38 per cent are unsatisfied with their present faculties; while in the latter case, the corresponding figures are 23.93 per cent and 23.51 per cent respectively.

The question of satisfaction, however, involves many factors. The major factors contributing to it may be subjective in nature and hence cannot unequivocably describe the objective state of affairs pertaining to the demands of the personnel specializing in different faculties and other relevant aspects. Satisfaction, being a state of one's psyche, depends on the dimension of aspiration and the degree of disillusionment that follows. This seems to explain the difference of satisfaction among the male and female students. For the same reason, the students whose present faculty is their first choice are the most satisfied groups. While 56.93 per cent of the students whose present faculty is their first choice, indicate that their faculty is satisfactory to them and 47.56 per cent of the students whose present faculty is their second choice feel that their present field of study is satisfactory, only 27.96 per cent of the students whose present faculty is their third choice are satisfied with their present field of study.

F. THE DEGREE OF ADEQUACY OF THE SECONDARY SCHOOL CURRICULUM

The students were asked whether they consider that the secondary school curriculum was adequate or inadequate in relation to the courses they are presently attending. The analysis of the responses gives the following results: 47.20 per cent of the students think that their secondary school curriculum is adequate and 39 per cent think it is inadequate, leaving 13.80 per cent who did not express any opinion whatsoever.

The percentage distribution of the students, according to their opinion regarding the adequacy of the secondary school curriculum, is similar in most of the sub-classes considered, as is evident from Table A.VI in the Appendix.

Some significant deviations observed may be discussed. It is seen that the percentage of students who find their secondary school curriculum is adequate, is maximum in the case of the wards of skilled workers (64.71 per cent). In the case of the wards of government employees, the corresponding figure is 49.15 per cent.

The percentage distribution slightly varies according to the sex of the students. It is seen that 46.76 per cent of the male students consider their secondary school curriculum adequate, whereas it is 52.63 per cent for female students. The distribution varies slightly according to the age-group of the students also.

G. SOURCES OF FINANCE

Among all the sources of finance for the students in higher education, the most predominant is the financial help from their families. It is seen that 35.14 per cent of the students surveyed are dependent on their families for monetary support to enable them to pursue higher studies. The next important source of finance is government help; 19.69 per cent depend wholely on the scholarship or bursary received from government sources and 7.92 per cent get only partial support from the government.

Some students, however, depend on their own income for meeting the expenses for their higher education; 12.93 per cent finance themselves through their employment.

Only 2.12 per cent of the students receive financial help for pursuing their studies from private sources other than their families.

The relative predominance of the different sources of finance varies according to the social class of the students, as can be seen from Table A. VII in the Appendix.

For example, the wards of people from the lowest income group are seen to benefit most by the financial help from the government sources. 23.40 per cent of the students whose guardians' income is less than £S250 meet their higher educational expenses fully through the financial help received from the government, while the corresponding figure is only 12.90 per cent in the case of the wards of people earning more than £S1,000.

H. DESIRED TYPE OF EMPLOYMENT ON COMPLETION OF EDUCATION

The students were asked as to whether they want to be permanently employed in their major field of study or not, after completion of their education. The analysis of the responses of the students concerning their willingness to accept a permanent job after their higher education is given below.

It is seen that 70.20 per cent of the students under survey want to be permanently employed in their own field of specialization, 22.20 per cent of the students want to be employed but not permanently, whereas 4.80 per cent of the students do not want at all to be employed in their field of study.

The responses vary according to the different classes of the students. For example, the above figures are seen to differ according to the guardians' profession, income range, age-group, etc. as shown in Table A. VIII in the Appendix.

For example, the willingness to be permanently employed is seen to be minimum in the case of the wards of the nomads. Only 50 per cent of the students whose guardians are nomads want to accept a permanent job. The corresponding figures are 73.08 per cent for the wards of the peasants, 73.73 per cent for the wards of government employees and

67.16 per cent for the students whose guardians are merchants.

There is a gradual fall in the percentage of students willing to be permanently employed in their major field of study with the increase of their guardians' income range. Thus, while 74.90 per cent of the students whose guardians' income is less than £S250 want to accept a permanent job in their own field, the corresponding figures are 66.67 per cent, 62.29 per cent and 61.29 per cent for the wards of the people whose income range is between £S250 and £S500, between £S500 and £S1,000, and more than £S1,000 respectively.

The responses of the female students differ from those of the male students: 23.15 per cent of the male students and 14.04 per cent of the female students want to be employed but not permanently. While 3.70 per cent of the male students do not want to be employed at all in their field of study, the corresponding figure is 8.77 per cent in the case of female students.

The interesting deviation occurs when the students are grouped according to the order of preference of their present field of study. Thus, 76.28 per cent of the students whose present faculty is their first choice, 65.85 per cent of the students whose present faculty is the second choice and 48.39 per cent among those whose present field of study is their third choice want to be permanently employed in their respective fields.

The choice of career, however, depends also on the success of the present course of study. The extent of the dependence of the choice of career on the success of the present studies has been analyzed. It is seen (Table A.IX in the Appendix) that 61.20 per cent of the students think that their choice of future career will greatly depend upon the success in their present studies. Twenty-three per cent of the students think that their choice of career is only slightly dependent on their success of the present course of study. 7.60 per cent of the students believe that their choice of career is not at all dependent on their success in their present academic pursuit.

It is seen that 77.60 per cent of the students expressed that they expect to be employed in the government sector. Only 17.40 per cent of the students expect to be employed in the private sector (Table A.X in the Appendix).

I. STUDENTS' WILLINGNESS TO ACCEPT A JOB IN RURAL AREAS

The students were asked whether or not they are willing to accept a job in rural areas; 72.2 per cent of the students expressed their willingness to accept a job in rural areas, but the remaining 27.8 per cent were not willing to do so.

Those students who were willing to accept jobs in rural areas were requested to give their reasons for doing so. Some probable reasons were given in the questionnaire. For example: (i) Rural areas need people like the respondent; (ii) Opportunity for free life; (iii) Better professional prospects and experience; (iv) Financial reasons; and (v) Family or social reasons.

As can be seen from Table A. XI in the Appendix, the first reason in the above list gets the highest score - 43.65 per cent of the students are willing to serve in rural areas because they feel that they are needed there. Better professional prospects and experience is the second main reason for students' willingness to accept a job in rural areas. 14.97 per cent of the students are willing to be employed in rural areas for financial reasons and 11.17 per cent for family or social reasons.

Those students who were only willing to accept jobs in urban areas were asked to give reasons for their unwillingness to serve in rural areas. The following probable reasons were suggested in the questionnaire: (i) Lack of tap water, electricity, etc.; (ii) Communication and transport difficulties; (iii) Separation from friends and relatives; (iv) Lack of scope for the particular skill of the respondent; (v) The monotony and slowness of rural life; and (vi) Lack of scope for improving competence, etc.

The scores of the above factors are given in Table A. XII in the Appendix. They are also ranked according to their relative importance. The most predominating factor that discourages the students from accepting a job in rural areas is the lack of scope for the skills of the respondent concerned. 23.34 per cent of the students are unwilling to accept a job in rural areas for this reason. The second most predominating reason is the unwillingness to be separated from friends and relatives, and to accept a monotonous and slow rural life. The next important reason is the lack of scope for improving competence and the delay in achieving career goals.

J. RELATIVE IMPORTANCE OF DIFFERENT FACTORS LEADING TO THE CHOICE OF OCCUPATIONAL CAREER

The students were asked about the degree of importance of certain factors in their choice of career. The following factors were given in the questionnaire: (1) Interesting work. (2) Use of special talents. (3) Use of educational background. (4) Creative work. (5) Absence of supervision. (6) Possibility of further studies. (7) Possibility of improving competence. (8) Utility to others and society. (9) Opportunity of working with people. (10) Possibility of good income. (11) Opportunity to travel. (12) Opportunity to supervise others. (13) Promotion. (14) Future security. (15) Availability of free time for family and hobbies.

It is seen that the majority of the students (65.20 per cent) indicate the most important factor to be whether the work involved is interesting or not. The next most predominant factor is the usefulness of the work to others and the society. 61.20 per cent of the students felt that this was a very important consideration for determining their choice of career. Security for the future is also a very important determining factor for 53. 20 per cent. 55. 80 per cent of the students opine that the opportunity for using their educational background is a very important factor in determining their career. The possibility of further studies is considered to be a very important career-determining factor by 53. 40 per cent of the students. Expectation of a good income is considered as very important by 49. 80 per cent of the students and the opportunity for working with people is a very important aspect to 50 per cent of the respondents.

The availability of time to repose and to be able to do justice to family life and hobbies is considered to be a very important aspect by 39 per cent of the students and another 40. 20 per cent consider it as important. This means that 79. 20 per cent stress this to be necessary in their occupational career.

Absence of supervision is the least important determinant in the choice of a career, as indicated by 49 per cent of the students. The opportunity for supervising other people is a moderately important incentive. Twenty per cent of the students consider it to be 'very important', 34. 20 per cent think it to be 'important' and 35. 40 per cent indicate that it is 'not important' in their choice of career.

The opportunity to travel is not important for 34. 80 per cent of the students, but 21. 60 per cent mark this aspect as 'very important' and 35 per cent consider it to be 'important'. Details of this analysis are given in Table A. XIII in the Appendix.

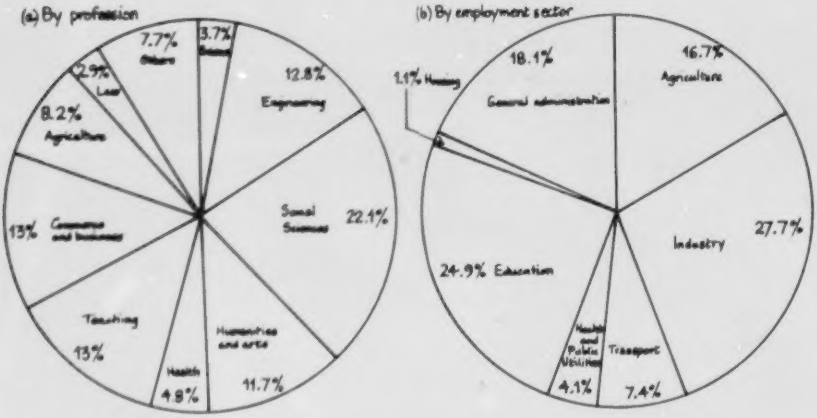
The students were asked to assign appropriate scores to the following six ways of gaining better knowledge of work conditions, promotion and suitability to them: (1) Practical job experience during the study courses. (2) Getting personal information from prospective employers. (3) Reading of career publications. (4) Discussion with employees in particular occupations. (5) Discussion with parents/friends. (6) Consultation with professional bodies.

The students think that practical job experience during their study would give them the best knowledge about their future working life. The students attribute least importance to the discussions with their parents and friends. The other means listed above are rated almost equally by the students. Details are given in Table A. XIV in the Appendix.

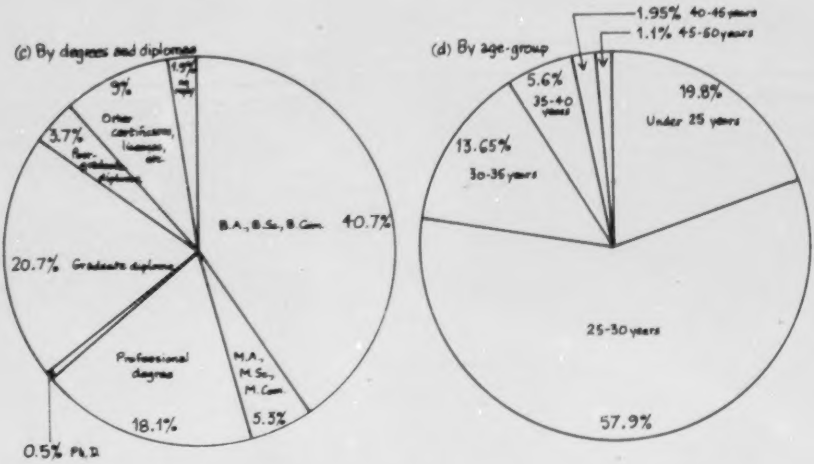
2. THE GRADUATES - THE HIGHER EDUCATION SYSTEM AND THE LABOUR MARKET

To analyze the inter-relationship between the attitudes of the graduates towards the higher education system and the labour market the following aspects were considered: the characteristics of the graduates, sources of information leading to employment, correspondence with father's occupation, waiting period for jobs, specialization and current profession, expectations in respect of job and the real situation, factors determining higher education, reasons for change of job, and the relevance of the educational system to the needs of the job. These are discussed one by one in the following pages.

Figure 9. Distribution of graduates responding to questionnaire


(a) By profession

(b) By employment sector


(c) By degrees and diplomas

(d) By age-group

A. SOME CHARACTERISTICS OF THE EMPLOYED GRADUATES

To analyze the inter-relationship between the attitudes towards the higher education system and labour market, the employed graduates surveyed were classified by their professions, their employment sectors, the degrees and diplomas they possess, their age and income-group, etc.

(i) Profession

It is seen that the maximum number of employed graduates (22.07 per cent of the respondents) are working in the field of social science. About 13.03 per cent of the employed graduates are in the teaching profession and the same percentage is engaged in commerce and business. 12.77 per cent of the graduates surveyed are in the 'engineering' profession and 8.24 per cent of the employed graduates have agriculture as their profession. The distribution of frequency of occurrence of each profession and the corresponding percentage have been given in Table 46.

(ii) Employment sectors

The graduates surveyed were classified according to the following sectors of the labour market: (i) agriculture; (ii) industry; (iii) transport; (iv) health and public utilities; (v) education; (vi) housing; and (vii) general administration.

The maximum number of graduates surveyed are working in the industrial sector, the percentage being 27.67 per cent. The education sector comes next with 24.93 per cent of the employed graduates working in this sector; 16.71 per cent are engaged in the agricultural sector, 18.08 per cent in the general administration sector and, 4.11 per cent in the health and public utilities sector. Details of the distribution of graduates in different sectors are given in Table 47.

(iii) Degrees and diplomas

The employed graduates were asked to name the degrees and diplomas they possess and quite a large number were mentioned in the response. For convenience, we have divided them into the following heads:

- B.A., B.Sc., B.Com.
- M.A., M.Sc., M.Com.
- Professional degrees.
- Ph.D.
- Graduate diploma.
- Post-graduate diploma.
- Other certificates, licences, etc.

Table 46. Distribution of graduates according to profession

Profession	Number of graduates	Percentage
Science	14	3.72
Engineering	48	12.77
Social sciences	83	22.07
Humanities and Arts	44	11.70
Health	18	4.79
Teaching	49	13.03
Commerce and Business	49	13.03
Agriculture	31	8.24
Law	11	2.93
Others (including non-response)	29	7.71
Total	376	100.00

Table 47. Distribution of graduates according to the employment sector in which they are working

Sectors	Number of graduates	% of graduates
Agriculture	61	16.71
Industry	101	27.67
Transport	27	7.40
Health and Public Utilities	15	4.11
Education	91	24.93
Housing	4	1.10
General administration	66	18.08
Non-response	11	
Total	376	100.0

The 'professional degrees' include B. Ed., B. L., M. B. B. S., B. Vet. science, B. Sc. (agriculture), etc. There are many types of diplomas - for example, diplomas in teacher training, in public administration, in statistics, in social work, in forestry, etc. The diplomas acquired after graduation have been considered as 'post-graduate diplomas', whereas the diplomas acquired after the school-leaving certificate have been considered as 'graduate diplomas'.

The maximum number of respondents are seen to possess either B. A. or B. Sc. or B. Com. The corresponding percentage is 40. 70. 20. 74 per cent of the employed graduates possess 'graduate diplomas', whereas about 18. 09 per cent possess 'professional degrees'. Only 5. 32 per cent of the respondents have a master's degree either in science, arts or commerce. The other 3. 72 per cent possess 'post-graduate diplomas'. Details are given in Table 48.

(iv) The age-group

For studying the distribution of the employed graduates in accordance with their age, we divided them into the following groups: (i) Less than 25 years, (ii) Between 25 and 30 years, (iii) Between 30 and 35 years, (iv) Between 35 and 40 years, (v) Between 40 and 45 years, and (vi) Between 45 and 50 years.

Table 48. Distribution of graduates according to their degree and diplomas

Degree/Diploma	Number of graduates	Percentage
B.A., B.Sc, B.Com.	153	40.70
M.A., M.Sc., M.Com	20	5.32
Professional degree (B.Ed., B.L., M.B. B.SC, B.Vet.Sc., B.Sc. (agri.)	68	18.09
Ph.D	2	0.53
Graduate diploma	78	20.74
Post-graduate diploma	14	3.72
Other certificates, licences, etc.	34	9.04
Non-response	7	1.86
Total	376	100.0

The sample does not contain anybody over 50 years of age. The maximum number of graduates (57.94 per cent) belong to the age-group ranging from 25 to 30 years. The 'mean age' of the employed graduates surveyed is 28.72 years and the 'standard deviation' is 4.445 years. Of the respondents, 19.78 per cent are less than 25 years of age, while 13.65 per cent belong to the age-group ranging from 35 to 50 years. Only 3.06 per cent of the employed graduates are aged over 40 years. The distribution of employed graduates according to age-group is given in Table 49.

(v) Father's occupation

The employed graduates indicated also the profession of their father. It is seen that 22.39 per cent are the children of peasants, 14.63 per cent come from the families of merchants and the remainder (62.98 per cent) indicate that their fathers are engaged in government and other services.

Table 49. Distribution of graduates according to their age-group

Age-range		Number of graduates	Percentage
Less than 25 years		71	19.78
25 - 30 years		208	57.94
30 - 35 years		49	13.65
35 - 40 years		20	5.57
40 - 45 years		7	1.95
45 - 50 years		4	1.11
	Sub-total	359	100.0
Non-response		17	
	Total	376	

(vi) Income range

The employed graduates were asked to indicate their present income range and the income which they received at the time of their first appointment. The whole income range was divided into the following groups: (i) Less than £S250; (ii) Between £S250 and £S500; (iii) Between £S500 and £S750; (iv) Between £S750 and £S1, 000; (v) Between £S1, 000 and £S1, 500; (vi) Between £S1, 500 and £S2, 000; (vii) Between £S2, 000 and £S2, 500; and (viii) Above £S2, 500.

At the time of the first appointment, the income of 89. 05 per cent of the employed graduates ranges from £S250 to £S750; of which 42. 90 per cent had an income (at the beginning of their employment) between £S250 and £S500 and 46. 15 per cent had an income between £S500 and £S750. 5. 33 per cent of the respondents had an income of less than £S250 and 5. 62 per cent had an income higher than £S750 at the time of their appointment. None of the employed graduates began his employment with an income of more than £S1, 500.

The distribution of graduates according to their present income range is however different. The present income of the maximum number of respondents (43. 24 per cent) ranges from £S500 to £S750; 10. 59 per cent have an income between £S750 and £S1, 000, and 4. 71 per cent have an income between £S1, 500 and £S2, 000. Only 1. 17 per cent of the graduates have a present income higher than £S2, 000.

B. SOURCES OF INFORMATION LEADING TO THE FIRST EMPLOYMENT

Sources of information on employment have been divided into the following headings:

- University authorities.
- Labour department.
- Newspaper.
- Personal contacts.
- Friends and relations.
- Others.

The analysis of the responses of the employed graduates shows that the 'labour department' is the most important source of information on employment. 43. 85 per cent of the graduates got their appointment on the grounds of the information they received from the labour department. Another important source of information is the 'university authorities'. 16. 58 per cent of the graduates found their employment with the help of information they got from the university authorities. The personal contacts are also a very important source of information on employment. 22. 46 per cent of the graduates got their job through personal contacts. Newspapers provided information on employment leading to the appointment of only 6. 15 per cent of the respondents (see Table 50).

Table 50. Sources of information on employment

Sources of information	Number of graduates	Percentage
University authorities	62	16.58
Labour department	164	43.85
Newspaper	23	6.15
Personal contacts	84	22.46
Friends and relations	8	2.14
Others	33	8.82
Total	374	100.0

The relative importance of the different sources of information on employment, however, depends on different factors. For example, the relative importance of the above sources of information are not the same for the graduates specializing in different subjects. It is seen to depend on the profession as well. Thus, the responses were analyzed for different sub-classes, grouping the graduates according to (i) their employment sector, (ii) their specialization, (iii) profession, etc.

Table A.XV in the Appendix shows the relative importance of the different sources of employment information for graduates belonging to the various employment sectors. For the agricultural sector, university authorities are the most important source of information. The same is the case for the graduates employed in the transport sector. For the other sectors, the labour department seems to be the most important source for employment. 60.87 per cent of the graduates employed in the general administrative sector, 48.04 per cent working in the industrial sector and 50 per cent serving in the educational sector got their first appointment through the information received from the labour department.

This table provides the degree of importance of different sources for the graduates having different specializations. It is seen that the 'personal contacts' are the most important source of employment so far as the graduates having science as their specialization are concerned. For the graduates who specialized in engineering, the information from 'university authorities' seems to be most important. The 'labour department' is most effective source of employment information for the graduates having social science, humanities and arts, and commerce as their specialization.

Table A. XV in the Appendix also shows the relative importance of the different employment information sources for the graduates having different professions. The graduates having 'natural science' as their profession indicate that the personal contacts played the most predominant role for providing them with jobs. For the graduates whose profession is engineering or agriculture, the 'university authorities' provided the most effective information for their employment. But for the graduates who specialized in social science, humanities and arts, or business and management, the labour department was the most important source for employment information.

C. THE CHARACTERISTICS OF THE DIFFERENT GROUPS OF EMPLOYED GRADUATES CLASSIFIED ACCORDING TO THEIR FATHER'S OCCUPATION

The distribution of graduates in different employment sectors, professions, specializations, etc. is seen to vary according to the occupation of the father. From Table A. XVI(a), it is evident that the majority of the graduates (27. 59 per cent) who are employed in the agricultural sector are the wards of the peasants. 18. 97 per cent of the graduates are the children of the civil servants and 13. 79 per cent come from the families of merchants.

In the industrial sector, 19. 78 per cent of the employed graduates surveyed are the children of peasants and the same proportion come from the families of civil servants; 17. 58 per cent are the wards of merchants.

In the public utilities and health sector, however, the maximum percentage of graduates (28. 57 per cent) are the children of civil servants, while only 7. 14 per cent come from peasant families.

Similar phenomena are observable in the distribution of graduates according to their professions. Among 13 natural scientists, 4 come from merchant families, 3 from families of civil servants and 2 from peasant families. The maximum number of engineers, 25 per cent come from the families of merchants, 15. 91 per cent from peasant families and 15. 91 per cent from both skilled workers and unskilled workers.

The maximum number (26. 32 per cent) of the graduates who specialized in 'natural sciences' come from merchant families, while 21. 05 per cent come from peasant families and 21. 05 per cent are the children of civil servants. Among the engineers also the percentage of the wards of merchants is maximum (25. 57 per cent), 13. 95 per cent belong to peasant families, while 18. 61 per cent come from the families of civil servants. 52. 94 per cent of the employed graduates surveyed are the children of civil servants, 17. 65 per cent belong to the peasant families and 11. 77 per cent come from merchant families. 37. 92 per cent of the graduates who specialized in agriculture come from peasant families.

The above figures, however, depend not only upon the influence of the father's occupation on the choice of specialization, profession, etc. by the children, but they also reflect the heterogeneous composition of our sample where the graduates were chosen irrespective of their father's occupation. In our sample, the percentage of the wards of peasants is the highest. In this connection, it is useful to note the distribution of graduates surveyed according to their father's occupation, as shown in Table 51.

D. RANGE OF WAITING PERIOD FOR GRADUATES BETWEEN GRADUATION AND THE FIRST EMPLOYMENT

The employed graduates were asked to indicate the period of time they had to wait between their graduation and their first appointment. The job situation was thus examined for different groups of students classified according to their age-group, profession, sector, degrees, etc.

It is seen that the maximum number of respondents belong to the age-group ranging from 25-30 years. The responses of the graduates of different age-groups thus correspond to the different years in the past. For example, the graduates 40 years or over must have started their jobs about 15 years ago. Table A. XVII in the Appendix shows how the employment situation evolved in the Sudan; 84. 85 per cent of

Table 51. Distribution of graduates according to father's occupation

Father's occupation	Number of graduates	Percentage
Peasant	75	22.39
Nomad	1	0.30
Merchant	49	14.63
Unskilled worker	25	7.46
Civil servant	71	21.19
Clerk	6	1.79
Skilled worker	38	11.34
Others	70	20.90
Sub-total	335	100.00
Non-response	41	
Total	376	

the graduates whose ages are less than 25 years got their first appointment within six months of their graduation and the remaining 15. 15 per cent within a year. None of them had to wait more than a year to get a job. As for the employed graduates aged between 25 and 30 years, 74. 63 per cent got their first appointment within less than six months after graduation and 17. 56 per cent had to wait a period of six months to a year. However, 17. 81 per cent had to wait more than a year to be employed.

The situation seems to be better for graduates of the higher age-group. For the graduates whose ages range from 30 to 35 years, 84. 42 per cent got their first appointment within a period of less than six months after graduation and 12. 50 per cent had to wait more than six months but less than a year.

The waiting period varies according to the profession of the graduates as well. For both medical personnel and agriculturists, 100 per cent got their first appointment within a period of less than six months after completion of their studies. As for the natural scientists, 92. 86 per cent got their first appointment within a period of less than six months, the rest (7. 14 per cent) were employed within a period of more than six months but less than a year. 77. 22 per cent of the social scientists could find a job within six months after the completion of their studies, 13. 92 per cent were appointed within a period of more than six months but less than a year and 8. 86 per cent had to wait more than a year to get a job after finishing their studies.

A percentage of 86. 05 of the teachers found a job within six months, 11. 63 per cent had to wait more than six months but less than a year and only 2. 32 per cent had to wait more than a year to be employed.

The employment situation for the lawyers seems to be worse. Only 10 per cent were employed within a period less than six months after the completion of their studies, 60 per cent got their jobs within a period ranging from six months to a year and 30 per cent had to wait more than a year to find a situation. (The number of lawyers in the sample is however only 11. The figure seems to be too small to represent the entire population but the exact situation observed in the country reveals the same.)

As for the engineers, 95. 75 per cent were employed within six months after the completion of their studies and 4. 25 per cent were employed within a year.

The waiting period varies for different employment sectors as well. 92. 59 per cent of the graduates serving in the transport sector were employed within a period of less than six months after finishing their studies and the remaining 7. 41 per cent got their first employment within a period ranging from six months to a year. The situation is better in the agricultural sector; 96. 72 per cent of the graduates working in the agricultural sector got their jobs within a period of less than six months after the completion of their studies and 1. 64 per cent within a period of more than six months but less than a year. The remaining 1. 64 per cent had to wait more than a year. In the industrial sector, 84. 85 per cent of the graduates got their first appointment within a period of less than six months, 13. 13 per cent within a period from six months to one year and 2. 02 per cent had to wait more than a year. As for the educational sector, 75 per cent of the graduates were appointed within a period of less than six months after the completion of their studies and the remaining 25 per cent had to wait six months to one year. The situation seems to be worst for the graduates working in the general administration sector; 62. 12 per cent were employed less than six months after the completion of their studies, 27. 27 per cent had to wait more than six months but less than a year and 10. 61 per cent had to wait more than a year to get their first appointment. Details are given in Table A. XVII in the Appendix.

The range of waiting period is different for the graduates having different degrees and diplomas. The graduates having professional degrees seem to be most privileged so far as job opportunities are concerned. It is seen that 94. 03 per cent of the graduates having professional degrees were employed within a period less than six months after the completion of their studies and the remaining 5. 97 per cent were appointed within a period more than six months, but less than a year. Among the graduates who have obtained their diplomas about 93. 15 per cent got their first appointment within a period of less than six months, 4. 11 per cent within a period ranging from six months to one year and the remaining 2. 74 per cent had to wait more than a year. 72. 73 per cent of graduates having M. A., M. Sc., M. Com. or Ph. D. degrees were employed within a period of less than six months and 27. 27 per cent within a period ranging from six months to one year, after the completion of their studies.

As for the graduates having B. A., B. Sc. or B. Com. degrees, 72. 26 per cent had the opportunity of finding a job within a period of less than six months, 23. 87 per cent had to wait more than six months but less than a year and 3. 87 per cent had to wait more than a year after the completion of their studies.

The situation is worst in the case of graduates who have other certificates, 31. 25 per cent had to wait more than a year to find a job, 15.63 per cent within a period ranging from 6 months to one year and only 53. 12 per cent within a period of less than six months.

E. SPECIALIZATION - PROFESSION MATRIX

The basis for estimating training needs for meeting manpower demand is the specialization - profession (education - occupation) matrix.

The distribution of graduates specializing in different branches according to the different professions has been found by analyzing the responses of the questionnaires. Table A. XVIII in the Appendix gives the percentage distribution of graduates according to their profession and specialization. The rows of the matrices correspond to the specialization and the columns correspond to the professions. Thus a figure a_{ij} (the matrix element in the i-th row and j-th column) refers to the number of graduates having i-th specialization and j-th profession.

It is seen that the diagonal elements are of much higher value than the non-diagonal elements (a_{ij} when $i \neq j$), which implies that most of the graduates have professions suitable for their specialization.

Table A. XVIII also shows the graduates specializing in natural science, 63. 64 per cent are working as natural scientists, 18. 18 per cent are engaged in teaching, 9. 08 per cent are serving as agriculturists and the remaining 4. 55 per cent are doing commercial business. Of the graduates specializing in engineering, 95. 75 per cent are engineers and 4. 26 per cent are teachers. The graduates specializing in law are practising law. Similarly all the graduates specializing in health are practising in their own field.

The social science and humanities are not rigid specializations and graduates specializing in these subjects are seen to be distributed in different professions. For example, 50 per cent of the graduates who specialized in humanities and arts are engaged in humanistic professions, 16. 25 per cent are social scientists, 17. 50 per cent are teachers, and 1. 25 per cent are working in business and management.

About 92. 86 per cent of the graduates who specialized in education and have gone through the teachers' training course are teaching, 3. 57 per cent are working as social scientists and 3. 57 per cent are engaged in humanistic professions.

As for the graduates who specialized in commerce and business, 89. 58 per cent are engaged in business and management, and 8. 25 per cent are working as social scientists.

F. REASONS FOR UNDERTAKING POST-SECONDARY EDUCATION

The employed graduates were asked to give reasons for their undertaking higher education. The following reasons were given:
(1) Need for a particular qualification.
(2) Need for a higher education for career reasons.
(3) Desire for more study for its own sake.
(4) Desire to continue participating in student life.
(5) Financial incentives offered by government or non-government agency.
(6) Lack of employment opportunities for secondary school graduates.
(7) Preference of urban life.
The analysis of the responses (see Table A. XIX in the Appendix) received from the graduates reveals the following facts.

The majority of graduates (32. 14 per cent) opine that they continued their studies after the completion of secondary education for acquiring a higher degree for career reasons. The need for a particular professional qualification gave the incentive to 31. 71 per cent of the graduates for undertaking post-secondary education. 17. 02 per cent of the employed graduates undertook post-secondary education because of their desire for higher education for its own sake. The financial incentives offered by the government or non-government agency induced 10. 71 per cent of the graduates to continue their studies after the completion of their secondary education. The lack of employment for secondary school graduates made 3. 36 per cent of them continue their education beyond secondary level. Only 2. 94 per cent of the graduates undertook post-secondary education due to a preference for urban life. The opinions correspond very closely to those of the students mentioned before.

The responses, however, vary according to the different sub-classes of the graduates.

Thus, for engineers, teachers and lawyers, the most important reason for undertaking the post-secondary education is seen to be the need for a particular professional qualification. 39. 65 per cent of the engineers, 39. 58 per cent of the teachers, 36. 36 per cent of the lawyers indicated that they continued their studies after the completion of secondary education to obtain a professional qualification.

The need for a higher degree for career reasons is the most important reason for continuing higher education in the case of natural scientists, social scientists and agriculturists. Fifty per cent of the natural scientists, 34. 21 per cent of the social scientists and 34. 21 per cent of the agriculturists indicated that they undertook higher education for career reasons. A large number of graduates in the humanistic profession (22. 81 per cent) indicated that they undertook higher education for its own sake. The financial incentives offered by the government and non-governmental agencies seem to be very important for the graduates in the health profession; 28. 12 per cent indicated that they continued their studies beyond secondary level for the above reason.

The responses vary according to the specialization of the graduates as well. The graduates specializing in engineering, commerce, education and law indicate that the need for a particular professional qualification is the most important reason for their undertaking higher education. The need for a higher degree for career reasons is the primary consideration in the case of the graduates specializing in natural science, social science, humanities and arts, health and agriculture. 19. 35 per cent of graduates specializing in natural science, 16. 07 per cent of the graduates specializing in engineering, 18. 45 per cent of the graduates specializing in social science and 20. 43 per cent of the graduates specializing in humanities and arts indicated that they continued higher education due to a desire for more study for its own sake.

As for the graduates possessing post-graduate diplomas, professional degrees, M. A., M. Sc., M. Com. or Ph. D. degrees, the need for a particular professional qualification and the need for a higher degree for career reasons seem to be equally important.

As for the graduates who had a job during their studies, the need for a professional qualification is the most important reason for continuing their studies beyond secondary level. 36. 30 per cent of the graduates who had a job while studying indicate that they undertook post-secondary education for a particular professional qualification, 34. 07 per cent undertook their post-secondary education for a higher degree for career reasons and 11. 11 per cent did so due to a desire for study for its own sake. The financial incentives offered by government or non-government agencies encouraged 8. 89 per cent of the graduates to continue their education beyond secondary level and 5. 19 per cent carried out their higher studies for the lack of employment opportunities for the secondary graduates.

As for the graduates who did not have a job while studying, the need for a higher degree for career reasons is the most important incentive for carrying out higher education. 31. 19 per cent indicated that they undertook post-secondary education for a higher degree for career reasons, 29. 74 per cent did so for a particular professional qualification and 19. 83 per cent indicated that they continued their studies after their completion of secondary education for the desire for higher education for its own sake. The financial incentives offered by government or non-governmental agencies encouraged 11. 37 per cent to continue their studies after their secondary education.

There is no significant variation in the responses between graduates who had a job while studying and those who did not.

G. FACTORS CAUSING GRADUATES TO CHANGE FROM THEIR DESIRED SPECIALIZATION

Not all the graduates could take up the specializations according to their desires. The students were asked about the reasons that caused them to shift from their desired specializations. Some reasons were given in the questionnaire. They are:

- financial reasons.
- family resistance.
- subsequently received better information on career possibilities.
- personal reasons.
- unexpected family circumstances.
- university admission regulations.

It is seen that 38. 14 per cent of the graduates who had to shift from their desired specialization did so because of the university admission regulation (this perhaps implies that these graduates, though they wanted to take up certain specialization, could not get admission because of the keen competition in getting admitted). (See Table A. XX in the Appendix.)

19. 53 per cent of the graduates who changed from their desired specialization indicated that they did so because of personal reasons, 17. 21 per cent shifted their interests after receiving better information on career possibilities, 15. 35 per cent could not study according to their desired specialization because of financial reasons, 5. 58 per cent gave family resistance as the reason and unexpected family circumstances prevented only 1. 40 per cent from studying in accordance with their desired specialization.

The relative importance of the factors causing the shifting of the desired specialization by the graduates is different in the case of those who had a job while studying and in the case of those who were jobless.

20.89 per cent of the graduates who had a job while studying shifted their specialization from the desired one because of the university admission regulations, while the corresponding figure is 45.95 per cent, in case of those who did not have any job while studying. Financial reasons prevented 20.89 per cent of the graduates who were working while studying and the corresponding figure being 12.84 per cent in the case of graduates who did not have any job while studying. 28.35 per cent of the graduates who had a job while carrying out their studies shifted their interests after receiving better information on career possibilities, while only 12.16 per cent of the graduates who did not have any kind of job during their studies, left their desired specialization after receiving better career information.

The responses do not however significantly differ in the case of graduates who studied while having a job and those who had no job.

The relative importance of the factors mentioned above is not the same for the graduates of all age-groups. As for the graduates having less than 25 years, 24 per cent of them changed their specialization from their desired one for financial reasons, 8 per cent for family reasons, 14 per cent for personal reasons, 10 per cent after receiving better career information, while 44 per cent were compelled to shift from their desired specialization because of the university admission regulations.

H. REASONS CAUSING GRADUATES TO CHANGE JOBS

Some graduates (81 among the respondents) changed their jobs during 1967 and 1972. The graduates were asked to give their reasons, if any, for changing jobs. The following reasons were given in the questionnaire and the students were asked to indicate their own among these:

- Better service conditions.
- Better future.
- Better use of training.
- Suitability to personal aptitudes.
- Loss of job.
- Former job was temporary.
- Social reasons.
- Others.

The analysis of the responses of the graduates (Table A.XXI in the Appendix) gives the following results. The maximum number of graduates who changed their jobs did so for better future prospects (the total score is 43). The factor of next highest importance is the better service conditions, the corresponding score being 24. The other important factors that encouraged graduates to change their jobs are the opportunity for better use of training (score 19) and the suitability of the present job to their personal aptitudes (score 14). The other reasons listed above seem not to have any significant importance.

The change of jobs seems to be rare in the cases of graduates having post-graduate diplomas, M.A., M.Sc., M.Com. or Ph.D. degrees, or professional degrees such as B.Ed., B.L., B.Sc. (agriculture) and B.Vet.Sc. In the case of graduates with B.A., B.Sc. or B.Com., the change of jobs is maximum. 41.94 per cent changed their jobs because the present job offers a better future; 24.19 per cent to obtain better service conditions, 17.74 per cent for better use of their training and only 8 per cent to suit their personal aptitudes.

The relative importance of the factors causing the change of jobs is different in the cases of graduates who had a job and those who did not have a job while studying. As for the graduates who were working while studying, 41.07 per cent changed their jobs for better future prospects, 16.07 per cent to have better service conditions, 16.07 per cent because their present situation suits their personal aptitudes better and 10.72 per cent to be able to use their training better.

As for the graduates who did not have any job during their studies, 36.36 per cent of them changed their jobs for better future, 27.27 per cent for better service conditions, 23.64 per cent for better use of their training and 9.09 per cent because the present job provides them with the kind of work that suits their personal aptitudes.

I. SOURCES OF FINANCING POST-SECONDARY EDUCATION

In order to know the contributions of the different probable sources of financing the post-secondary education of the employed graduates, they were asked to indicate which of the following sources were relevant to their own cases:

- Privately through employment.
- Government sources.
- Private sources other than family.
- Privately by family.
- Financed by other sources.

The government sources are seen to be the most important. About 44.33 per cent of the employed graduates indicated that their post-secondary education was financed by government sources. The next in order of importance are the family sources. 35.05 per cent of the graduates met their post-secondary educational expenses through the financial aid they received from their family and 12.89 per cent financed their education through their own employment. The contribution of other sources listed above is insignificant. (See Table A.XXII in the Appendix.)

However, the situation is different in the cases of graduates who had a job during their studies and those who did not. 34.31 per cent of the graduates having a job during their studies indicated that they themselves financed their education through employment, 39.22 per cent met their educational expenses through government sources, while 22.55 per cent received financial support from their families to meet the expenses of their post-secondary education. In the cases of graduates who did not have any jobs, their responses regarding the source of financing their post-secondary education are considerably different. Most of them (46. 15 per cent) received government aid to meet their educational expenses, and 39. 51 per cent indicated that their education was financed by their families. The responses do not differ much in the cases of graduates having different degrees and diplomas.

J. OPINION OF THE GRADUATES REGARDING THE RELEVANCE OF THE EDUCATIONAL SYSTEM

Among the 376 employed graduates, 199 (52. 93 per cent) consider the educational system as relevant to the needs of their jobs and the society, 129 graduates (34. 31 per cent) think it to be fairly relevant, while 19 graduates (5. 05 per cent) opine that the educational system is irrelevant to the needs of the society and their jobs. Twenty-nine graduates (7. 71 per cent) however did not express any opinion.

The opinions differ in the cases of graduates serving in different employment sectors. For example, in the case of graduates serving the agricultural sector - 72. 13 per cent consider the educational system as relevant, 18. 03 per cent as fairly relevant and none of them think of it as irrelevant. 9. 84 per cent of the graduates of this sector, however, did not express any opinion. In the cases of graduates in the industrial sector, 50. 99 per cent think that the educational system is relevant, 36. 27 per cent as fairly relevant, 3. 70 per cent as irrelevant to the needs of their jobs and the society, and 8. 82 per cent did not express any opinion.

Of the graduates employed in the transport sector, 74. 08 per cent think that the educational system is relevant to the needs of their jobs and the society, 18. 52 per cent think that it is fairly relevant and only 3. 70 per cent consider it to be irrelevant.

The graduates in the educational sector seem to be least satisfied with the educational system, 41. 76 per cent of the graduates serving in the educational sector consider that the educational system is relevant to the needs of their jobs and the society, 36. 26 per cent consider it to be fairly relevant, while 11 per cent as irrelevant. Details are given in Table A. XXIII in the Appendix.

In the cases of graduates serving in the general administration sector, only about 3 per cent of them consider that the educational system is irrelevant to the needs of their jobs and the society, 38. 81 per cent think it to be relevant and 53. 72 per cent consider it to be fairly relevant.

The opinions of the graduates differ according to the age-group as well. It is seen that the graduates of the lower age-group are less satisfied with the educational system. The graduates less than 25 years represent 8. 07 per cent, 6. 70 per cent between 25 and 30 years and 2. 08 per cent from 30 to 35 years consider that the educational system is irrelevant to the needs of their jobs and the society.

K. POSSIBLE MEANS OF CO-OPERATION FROM GRADUATES TOWARDS IMPROVING THEIR POST-SECONDARY EDUCATION

The employed graduates were asked whether they are willing or not to co-operate in improving the performance of the post-secondary educational institutes. 98.50 per cent of the graduates expressed their willingness to do the same. Three possible means of co-operation were suggested to the graduates. They are:

- As a member of an advisory group.
- Filling in questionnaires.
- Attending some of the meetings.

All the above factors got almost equal scores: 178 graduates were willing to offer their co-operation towards improving the educational institutes through filling in of questionnaires, 161 graduates were in favour of attending some meetings through which they may express their opinions and suggestions for improving the performance of the educational institutes and 156 graduates wanted to advance their co-operative efforts by becoming members of an advisory group.

3. THE EMPLOYERS - THE HIGHER EDUCATION SYSTEM

The relationship between the employers and the higher education system was analyzed, keeping in view the characteristics of the sample, with respect to the different aspects of the recruitment mechanism, possible assistance to the higher education system and provision for on-the-job training. This is discussed below.

A. THE CHARACTERISTICS OF THE SAMPLE OF EMPLOYERS CHOSEN

(i) Type of control

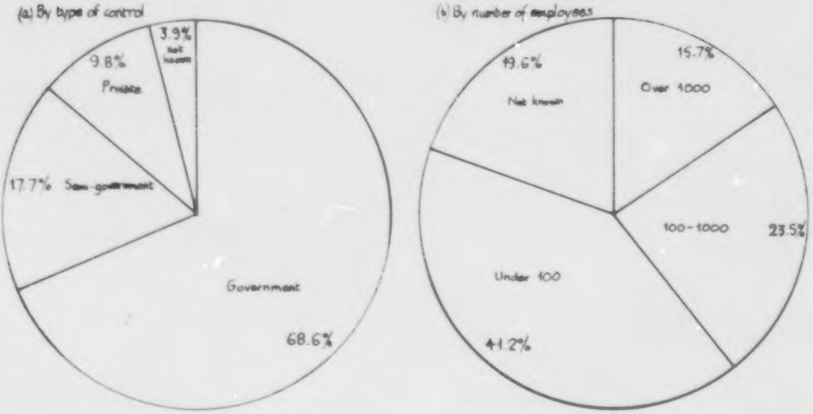
The employers surveyed were chosen from different sectors - private, government and semi-government. Among the 51 employers under survey, 35 (68.63 per cent) are government concerns, 9 (17.65 per cent) are semi-government concerns and 5 (9.80 per cent) are private enterprises. Two employers, however, did not specify the type of control of their firms. Thus, according to the type of control, the employers may be divided as follows:

Type of control	No. of firms	%
Government control	35	68.63
Semi-government control	9	17.65
Private control	5	9.80
Control unknown	2	3.92
	51	100.00

Fig 10 Distribution of employers responding to questionnaire

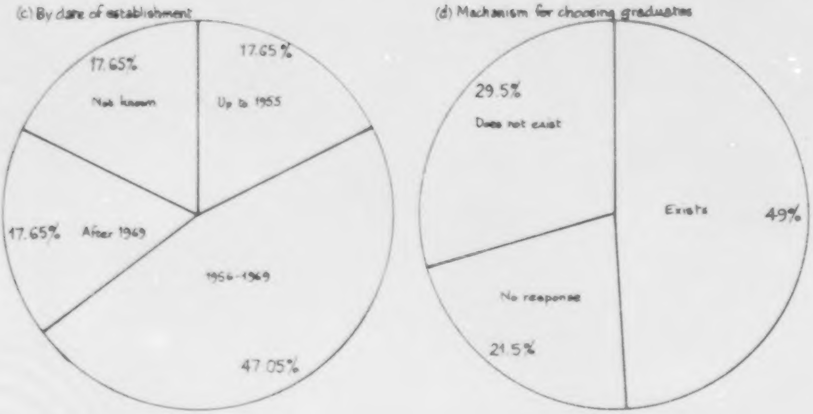
(a) By type of control

(b) By number of employees



(c) By date of establishment

(d) Mechanism for choosing graduates



(ii) Size of the firms

The size or the number of employees also varies significantly from firm to firm. Some firms have more than 1,000 employees and some others have less than 100 employees. The analysis of the data reveals the following facts:

No. of employees	No. of firms	%
Above 1,000	8	15.69
Above 100 but less than 1,000	12	23.53
Below 100	21	41.18
Unknown	10	19.61

It is seen from the above data that 41.18 per cent of the firms have a number of employees below 100. Only 15.69 per cent of the firms have more than 1,000 employees, about 23.53 per cent of the firms have employees ranging from 100 to 1,000 and 19.61 per cent of the employers did not specify the number of employees working in their firms.

(iii) Date of establishment

The survey includes both old and new firms. Out of 51 firms, 9 (17.65 per cent) firms were established on or before 1955, 24 (47.06 per cent) firms were established during the period from 1956 to 1969, 9 (17.65 per cent) were established after 1969 and 9 (17.65 per cent) employers, however, did not mention the date of establishment which therefore remains unknow for these concerns. According to the date of establishment, the spectrum of the sample is as follows:

Date of establishment	No. of employers	%
Up to 1955	9	17.65
1956 to 1969	24	47.05
After 1969	9	17.65
Unknown	9	17.65
	51	100.00

B. MECHANISM TO DECIDE ON WHAT KIND OF GRADUATES THE EMPLOYERS NEED

The employers were asked whether they have a mechanism which may enable them to decide as to which type of graduates they require. Twenty-five employers (49.02 per cent) under survey indicated that there exists such a mechanism in their concerns. Fifteen of them

(29.41 per cent) indicated that they did not have such a mechanism. Eleven of the employers (21.57 per cent) did not give any response regarding this. The data obtained may be tabulated as follows:

Mechanism to choose right graduates	No. of employers	%
Exists	25	49.02
Does not exist	15	29.41
No response	11	21.57
	51	100.00

C. THE DIFFERENT MEDIA OF RECRUITMENT

The employers were asked to indicate the relative importance of the following media in the recruitment of their personnel:

- Institutional authorities.
- Newspaper advertisement.
- Personal contact with the employees.
- Labour department.
- Friends and relatives of the employees.
- Others.

The analysis of the responses given by the employers reveals that the most important medium of recruitment is the 'Labour department'. The employers, however, indicated more than one medium of recruitment. The total scores received by all media collectively is 78. Out of these 78, the score received by the 'Labour department' is 28 (35.90 per cent). The 'Institutional authorities' as the medium of recruitment gets the next highest score (26.92 per cent). Newspapers are also an important medium of inviting applications from the interested candidates who are subsequently assessed by the different criteria of recruitment. The score received by 'newspaper advertisements' as the recruitment medium is 20.51 per cent.

Personal contact with employees and, with their friends and relatives is not very important for the employers to recruit their employees.

D. DIFFICULTIES IN DEVELOPING A GOOD RECRUITMENT MECHANISM

There are several difficulties that the employers usually face in recruiting suitable people for the jobs available. Some probable difficulties were listed in the questionnaire and the employers were asked to indicate the importance of these according to their opinions, as follows:

1. Lack of coherence between the educational institution and employers' needs.

2. Divergence between the training graduates actually have and what they are supposed to have.
3. Better performance in academic life does not ensure better job performance.
4. Type of job is too complex to allow for precise specification of educational degree needed.
5. Type of training at the educational institute is not sufficient for the skill needed.
6. Other difficulties.

The most important difficulty in choosing the proper employees is the divergence between the training the employees undergo and what they are expected to have in view of the degrees and diplomas obtained and the training courses they took. Some of the employers indicate more than one difficulty. In other words there are some multiple responses to the question regarding the difficulties of good recruitment. The total score of all the factors is 84. Out of 84, 23 occur to the above factor. This means that 45.1 per cent of the employers are disappointed by the divergence between the actual capability of the employees and what the people of their level of education and training should have.

Besides, the employers are also deceived by choosing candidates according to their academic performance. They indicate that there is a lack of correspondence between the academic performance and the job performance of the graduates. Many employers indicate that the better performance in academic life does not necessarily ensure a better job performance. 37.25 per cent of the employers think that there is a very high correspondence between the educational background and the job performance, 50.98 per cent think that there is only a moderate correspondence between these two aspects of the graduates and 5.88 per cent of the employers however think that there is no correspondence between the job performance and the educational background.

29.41 per cent of the employers think that one of the difficulties for selecting the candidates seeking jobs is that the type of training at the educational institutes is not sufficient for the skills needed for the job. 11.76 per cent of the employers indicated that the type of job is too complex to allow for the precise specification of the degree needed.

E. THE IMPORTANCE OF DIFFERENT CRITERIA FOR RECRUITMENT

In order to assess the relative importance of the different types of criteria of recruitment followed by the employers, they were asked to indicate the degree of importance of the following aspects in their own recruitment:

- academic record.
- aptitude test.
- interview.
- past experience in similar job.

- letter of recommendation.
- physical appearance.
- others.

The most important criterion of recruitment seems to be the academic performance of the candidates seeking jobs. As for the overall sample, it is seen that 74.51 per cent of the employers consider that the academic record is very important as the basis of recruitment of employees, 15.69 per cent consider it important, though not very important, 1.96 per cent as unimportant and 7.84 per cent of the employers did not give any response in this respect.

Interview is also an important basis for assessing the candidates, 50.98 per cent of the employers stress the fact that 'interview' is very important regarding the selection of candidates and 37.25 per cent consider it to be important.

Aptitude tests and past experience are also important aspects of consideration for the selection of employees. 27.45 per cent of the employers emphasize that the aptitude test is a very important criterion of selection, 27.45 per cent consider it important and 11.76 per cent consider it unimportant. It is to be noted that all the employers do not have separate 'aptitude test' mechanisms for evaluating the knowledge and qualities of the graduates. Thus 33.33 per cent of the employers did not give any response in this respect, probably considering this aspect of judging the graduates as irrelevant to their way of recruitment.

Past experience is a very important criterion for 33.33 per cent of the employers, 39.22 per cent of the employers indicated that this is an important consideration for the selection of candidates, 9.80 per cent think it to be unimportant and 17.65 per cent did not respond.

The letter of recommendation seems to be the least important criterion of recruitment. About 50.98 per cent of the employers indicated that the letter of recommendation is unimportant in the selection of employees. Only 3.92 per cent think that it is very important, 15.69 per cent think that it is important, though not very important and 29.41 per cent did not respond.

Physical appearance is also moderately important in recruitment, 31.37 per cent of the employers stressed its importance, 15.69 per cent consider it as very important and 29.41 per cent as unimportant.

The relative importance of the above criteria varies slightly with the different sub-classes of the employers. The details of the analysis are given in Table A.XXIV in the Appendix.

F. OPINION OF THE EMPLOYERS AS TO WHETHER THEY WOULD LIKE TO SEE THE INSTITUTES OF HIGHER EDUCATION MORE CONCERNED ABOUT EMPLOYERS' NEEDS IN DIFFERENT ASPECTS OF TRAINING THEIR STUDENTS

The employers were asked whether they would like to see the higher educational institutes more concerned with the needs of the labour market in: (i) formulating their curriculum; (ii) choosing the method of instruction; and (iii) general development of training programme.

66.67 per cent of the employers would like the higher educational institutes to take into consideration the employers' needs while formulating the curriculum, 45.10 per cent would like to see the higher educational institutes choose their method of instruction according to the needs of the employers and 64.71 per cent would like the institutes of higher education to develop some general training programme to produce graduates to the needs of the employers. Details are shown in Table 52.

G. NATURE OF CO-OPERATION EMPLOYERS ARE PREPARED TO OFFER TO THE EDUCATIONAL INSTITUTES IN THE DEVELOPMENT OF COURSES NEEDED FOR THE LABOUR MARKET

The employers were asked whether they are willing to co-operate with the educational institutions in the development of some training courses in the following ways: (i) as a member of the curriculum committee; (ii) as a participant in the teaching programme; (iii) in filling in questionnaires from time to time; (iv) in evaluating the training programme; and (v) by sending their staff for such courses.

Forty-three per cent of the employers want to co-operate with the educational institutions by being members of their curriculum committee and about 41 per cent are willing to extend their co-operation by participating in the teaching programme.

54.90 per cent of the employers are willing to co-operate with the institutes of higher education by filling in questionnaires from time to time. Forty-five per cent are willing to help the educational institutes in evaluating the training programme. 76.47 per cent are ready to send their staff to such courses if organised in the educational institutes. Details are shown in Table 53.

Table 52. Areas in which institutions should be more concerned

	Yes		No		No opinion	
	No.	%	No.	%	No.	%
Over-all						
Formulating their curriculum	34	66.67	6	11.77	11	21.56
Choosing the method of instruction	23	45.10	5	9.80	23	45.10
General development of training programme	33	64.71	3	5.88	15	29.41

H. OPINION AS TO WHETHER THE EMPLOYERS ARE PREPARED TO ASSIST THE HIGHER EDUCATIONAL INSTITUTES

The employers were asked to give their opinion as to whether they are prepared to assist the higher educational institutions in:

- developing their curriculum.
- suggesting methods of instruction.
- evaluating their training programme.
- developing research projects related to their firms.

Employers who are prepared to help the higher educational institutes in developing their curriculum represent 51 per cent; about 39 per cent are ready to assist the educational institutes by suggesting methods of instruction and 64. 70 per cent are prepared to help the educational institutes by developing research projects relating to their firms. Details are shown in Table 54.

I. OPINION OF THE EMPLOYERS AS REGARDS THEIR INTEREST IN HAVING SPECIAL COURSES FOR INDUSTRY/BUSINESS, ETC. AT HIGHER EDUCATIONAL INSTITUTIONS

The general courses run by the educational institutes cannot cater for the varied needs of the labour market. Nevertheless, they may start some special courses with a view to meeting the needs of industry/business, etc. of the country. Employers were asked whether they wanted the institutions of higher education to start such courses. The analysis of the responses reveal the following facts: about 55 per cent of the employers are willing to see higher educational institutes run such special courses; about 29 per cent are, however, not interested in such special courses and the remaining 16 per cent did not express any opinion.

J. TRAINING FACILITIES IN DIFFERENT CONCERNS

58. 82 per cent of the concerns have training facilities for their personnel. The government firms have the maximum training facilities. 65. 71 per cent of government-controlled establishments have training facilities for their personnel.

Most of them send their employees for training in order to meet special requirements of the firm. Upgrading the general standard of personnel is another reason for sending them for training.

Only 33 per cent of the semi-governmental concerns have training programmes for their employees. The situation is better in private concerns, 60 per cent of the privately-controlled firms have training facilities for their employees.

Table 53. Nature of the prospective co-operation of the employers with the institutions of higher education in the development of courses for their personnel

	Yes		No		No opinion	
	No.	%	No.	%	No.	%
Over-all						
As a member of curriculum committee	22	43.13	9	17.65	20	39.21
As participant in the teaching programme	21	41.18	7	13.23	23	45.09
In filling out questionnaires from time to time	28	54.90	6	11.77	17	33.33
In evaluating the training programme	23	45.10	3	5.88	25	49.02
By sending their staff for such courses	39	76.47	3	5.88	9	17.65

Table 54. Opinion with respect to whether the employers are prepared to assist higher education institutions

	Yes		No		No opinion	
	No.	%	No.	%	No.	%
Over-all						
Developing their curriculum	26	50.98	8	15.69	17	33.33
Suggesting methods of instruction	20	39.22	10	19.61	21	41.18
Evaluating their training programmes	26	50.98	8	15.69	17	33.33
Developing research projects relating to firm/insitution	33	64.70	8	15.69	10	19.61

Those who have no training facilities for their staff were asked whether they would like to have training facilities for them. More than 77 per cent are willing to have such training facilities for their employees.

Most of the staff who undergo training are away from their respective firms and this represents about 47 per cent.

K. OPINION ABOUT 'SANDWICH' STUDENTS AND COURSES

The employers were asked whether: (i) they accept college-based 'sandwich' students, (ii) they have 'sandwich' students in their organisation, and (iii) they have industrial projects for students.

20.70 per cent of the concerns accept the college-based 'sandwich' students, but 39.65 per cent do not accept such students in their firms. However, 39.50 per cent indicated that they may accept such students in the future (see Table 55).

As for the availability of industrial projects for the students, only three government firms answered in the affirmative.

4. IMPLICATIONS FOR PLANNING

It may be observed in the above analysis that the most important factor determining demand for higher education is the need for a formal degree for career reasons. The same opinion is expressed by the students and the graduates. Career prospects, as they prevail today in the Sudan, are less in the field of agriculture and therefore causing less popularity in this field. Although career prospects are less in the humanities and art-based fields, more students eventually get

Table 55. Opinion of the employers regarding sandwich courses

	Yes		No		May have in future		No opinion
	No.	%	No.	%	No.	%	No.
Over-all							
Do you accept college-based sandwich students?	12	20.70	23	39.65	23	39.50	9
Do you have sandwich students in your organization?	12	22.64	27	50.94	14	26.42	10
Do you have any industrial projects for students?	3	5.66	34	64.15	16	30.19	9

themselves admitted to these fields because of lack of places and hard competition in the more popular fields. The private rate of return (even when discounted for the waiting period to find employment) with a higher degree in less popular fields, is higher than not having a formal higher degree.[1] To orient the students towards fields of study which are more needed for the development of the economy, the career prospects, i.e. salary structure, recruitment and promotion practices, etc., have to be oriented towards such needs.

Career guidance facilities which do not exist to a satisfactory degree for most of the students at the secondary level at present, have to be extended to keep the students informed of career prospects.

It should also be noted that for female students career prospects do not count so much. They study for their own sake. This is also supported by the fact that female participation in employment is very little. Traditional customs and beliefs which stood in the way of women's participation in the development of the country in the past cannot be removed so easily. Vigorous attempts have to be made through vocational counselling to urge them to participate in leading the country to achieve its development goals. It may also be necessary to provide special incentives for them to participate in higher education and employment. A quota system for girls could be introduced for each institution of higher education. Staff rules for female employees could be modified to encourage them to accept productive employment.

So far as the adequacy of the secondary school curriculum is concerned, a substantial proportion of students are disappointed. This leaves room for a lot of improvement in the content and curriculum at the higher secondary level. Actual experience shows that the standard of teaching of science and mathematics at the higher secondary level is far below satisfaction. Lack of trained teachers also constitutes part of this dissatisfaction. The admission policy formulated in an earlier chapter could help reduce this problem if properly implemented.

Most students prefer to have practical job experience during their studies. The employers are also ready to assist the institutions of higher education in developing 'sandwich' courses. Such experience gives better knowledge of work and prospective employment, and could reduce many of the difficulties faced by the fresh graduates in their jobs. This would also enable the employers to acquaint themselves with the potential employees. This sort of practical work in the field could easily be organised in the Sudan for all kinds of specialization, including humanities and arts. This would also help the teachers to do their jobs more satisfactorily for themselves, the students and the employers.

As regards sources of information in respect of employment, the graduates and the employers differ on the role of personal contact; the former emphasizing this role and the latter understating it. The labour department is considered the most important source for both of them. This leads us to suggest that a strong organisational mechanism for the placement of graduates is necessary. This would involve not only looking for jobs for the graduates, but helping the employers to describe the jobs correctly and identifying graduates suitable for different jobs, and developing suitable criteria for recruitment. In all these areas the employers face a great deal of difficulty. Although they feel that the correlation between academic performance of a graduate and his performance on the job is minor, they still assign academic record the highest importance in recruiting graduates. Absence of suitable criteria for recruitment obliges them to follow the only objective way, i.e. to look at the academic record.

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[1] Gariballa, M.H., The economics of higher education in the Sudan, unpublished M.Sc. (Econ.) thesis, Khartoum, 1970.

Job opportunities should be created in the rural areas, according to regional needs. The majority of students are willing to work in the rural areas provided their skills are properly utilized and they are compensated for the somewhat harder life.

Finally, it is observed that much better performance can be achieved both in the higher education sector and in the labour market through better interaction between the institution authorities, the employers, the graduates and the students.

VII. Conclusions for strategy

The purpose of this study has not only been diagnostic but prescriptive in the sense that measures to remedy the existing inconsistencies have been suggested. Alternative strategies for admission policy relevant to the employment possibilities of the graduates of the higher education system in the Sudan have been formulated. These strategies are only suggestive and not definitive, since nothing is certain about the future. The alternatives have been formulated in view of the uncertainties about future manpower needs and the absence of a national manpower plan. Higher education should be planned on the basis of the employability of graduates. This calls for an effective manpower element in future national planning. Expansion of the intake to higher education is to be undertaken by quota according to detailed projections of need which are continually monitored and updated.

We have analysed the factors that determine the students' choice of an educational career. In order to make any manpower plan successful these factors cannot be ignored. In the orientation of students towards the fields of specialization, the importance of career guidance can hardly be over-emphasized - especially in the Sudan where most students choose their specialization by themselves and where very few students receive any worthwhile career information. The reward system in respect of salary and career prospects for graduates of technical and higher education is to be substantially revised in line with the labour market forces of demand and supply, so that the flow of students is influenced by the economic need.

In any development process, regional disparities and disparities among social classes should be considered as undesirable factors. The admission policy of the higher education system should be geared to a balanced distribution among different social and regional groups even if it slows down the needs of development. Otherwise too few people will be enjoying too much benefit at the cost of too many, and in the long run disastrous discontent will be the result.

How can we implement such a strategy? The present study attempts to develop a methodology by which inconsistencies can be identified and controlled. But can this methodology be applied? No strategy exists in a vacuum; shared aims, rational preparation and willpower are essential to implement any educational policy which has a tangible shape, existing at several levels and adjusted to fit the peculiar circumstances and responsibilities of each level and place. Strategies and goals vary from individual to individual, region to region, and from institution to institution. But if they are to be mutually reinforcing, they must have a common approach to diagnostic acts, must be founded in a broad consensus which would cover diverse interests, and enjoy the loyalty of the leaders of different groups. There are two indispensable features which any higher educational policy must have: firstly, it should focus on the relationship of factors and seek improved interaction between the authorities of higher education institutions and those directly affected by their action. This needs a systems approach which facilitates continuous monitoring, feedback and control of the implementation of the policy. The second feature is to look for new ideas and methods to solve emerging problems, not on a piecemeal basis but on an overall basis. If there is to be a major effort in implementing such an educational strategy in the Sudan, the following steps should be taken.

A. THE MANPOWER PLANNING UNIT

This unit of the Department of Labour should analyse the needs of the different sectors of the economy in quantitative terms, establish the quota by different specializations for a future target date, and monitor any quantitative mismatch, and then communicate this to the National Council for Higher Education. This unit should also be entrusted to assist employers with tools for job description and criteria for recruitment best suitable for their work; ways and means to encourage graduates to accept jobs in outlying areas have to be found. The implications on staff rules for participation in employment of different social classes have to be analysed and implemented. Ways to promote job opportunities in outlying regions have also to be identified.

B. ESTABLISHMENT OF AN INSTITUTIONAL RESEARCH UNIT

This will have as objectives the assessment of the qualitative mismatch of the higher education system by means of periodical surveys in conjunction with the manpower planning unit and the communication of the results to the different institutions. This unit will also analyse the cost efficiency of different institutions and recommend measures to reduce cost without impairing the efficiency of the system. Despite its long-term potential, the Sudan is still a poor country and resources are scarce. Expansion in higher education has to be geared to manpower needs.

Another task of this unit will be to study the regional projects for development in collaboration with various ministries and the Planning Commission. Programmes for training to supply the needs of such projects have to be developed by this unit. Regional disparities and their causes are also to be analysed and ways of minimizing them should be suggested to the different ministries. Disparities in the distribution of higher education among the different social classes and the causes are also to be identified and remedies should be suggested.

This unit, which should be part of the National Council for Higher Education, will transmit to different institutions the quotas for admission to different specializations.

Analysis of internal efficiency with the analysis of repetition, drop-out and failure should be carried out by this unit and possible means of reducing wastage should be suggested.

Brochures giving the career prospects of different fields of studies should be brought out each year and circulated to secondary school students.

The relevance of the scholarship should be analysed, keeping in view the skills needed urgently for the country. The relevance of the boarding system should also be analysed for each institution and for different types of students.

Areas in which training facilities are lacking in the country but which are necessary for its development have to be identified. The relevance of the training offered by the institutions of higher education should be assessed from time to time through surveys and the results transmitted to the institutions for adjustment. The relevance of training abroad also has to be examined for different specialities.

The scientific and technical potential of the country should be up-dated every year in collaboration with the Manpower Planning Unit.

In the long run, a system could be developed in which all the graduates of the institutions of higher education could be followed up during their occupational career to identify the factors responsible for a particular career profile. The Scientific and Technical Potential Survey results could be taken as a starting point for such follow-up.

C. ESTABLISHMENT OF AN EMPLOYMENT COMMITTEE IN EACH INSTITUTION

Each institution should have a committee to assist the Manpower Planning Unit of the Department of Labour in finding employment for the graduates. This unit would be the link between the institution and the National Council for Higher Education in respect of the activities related to the Labour market. This will also organize practical job experience for students during vacation or during the regular course of study as a part of the training programme to provide the students with better knowledge about prospective employment. Regular contact will be established between institutions and employers through this committee.

D. ESTABLISHMENT OF AN EDUCATION-EMPLOYMENT INFORMATION SYSTEM

The proposed units are the basic components of an education - employment information system, where each unit would supply information to the institutional research unit which in turn would analyse the consequences of different strategies or assess the performance of a particular component in the higher education system to be used to control the operation of the higher education system to achieve desired targets. The needs of the labour market in both quantitative and qualitative terms, the results of the periodical assessment of the operation of the higher education sector and the labour market through attitude surveys will be the basic tools for continuous monitoring and adjustment of the higher education system.

Finally, all this information could be computerized to avoid complexity of the work and ensure the rapidity of the analysis. This analysis would be the basis for planning the development of higher education in the Sudan - a system of higher education which will be oriented towards the needs of the society, distributed equally among different regions and social classes - a system flexible enough to cater for emerging needs.

E. THE ROLE OF NON-FORMAL EDUCATION TO MEET EMERGING NEEDS

Sudan's present socio-economic state causes deep concern among the Sudanese for orienting higher education to economic development. With the internal problems mostly under control and external aid flowing in, the economy of the Sudan would need skills of varied types in large numbers and probably very suddenly. The formal education system may not be able to adapt rapidly enough to these changing needs. This draws attention to the importance of the non-formal education system parallel to the formal education system in the contribution to economic development. The Sudan is however not inexperienced in this field. The Sudan Gezira Board has already a well-established non-formal system of training for its employees. Such training programmes have to be extended to the economic activities where they are needed. The formal education system will have to cooperate with and be prepared to contribute to and receive assistance from these units. A better coordination of the formal and non-formal educational units will make the system of higher education in the Sudan more successful in achieving its goals.

F. LIMITATIONS OF THE STUDY

Although we expect that the present study will be useful in formulating policies for the development of higher education in the Sudan, the limitations of the study should be noted. When the study was started, the data base for both education and employment in the Sudan was poor. There was no manpower survey for use in forecasting the needs of the economy for highly qualified manpower. Actual manpower forecasting does not play any role in the study. We based our estimates of needs on intelligent guesses from different sources of information mentioned in the text. This is why we are particularly anxious to stress that the strategies which have been developed are only suggestive and need continuous monitoring. The findings of the attitude surveys of the students, graduates and employers are also to be used with caution and with reservation, as is the case for any sample survey of social behaviour.

Limitations of the survey data have already been discussed in the section on reliability and validity of the data (see Chapter I).

Appendix I

Table A.I. Scores of different reasons for continuing in higher education

Reasons		Need for particular professional qualification	Need for higher degree for career reasons	Desire for more study for its own sake	Lack of employment opportunities for secondary graduates	Preference for town life	Others	Non-response	TOTAL
Overall Sample		181	167	127	30	18	10	8	541
	%	33.46	30.87	23.47	5.54	3.33	1.85	1.48	100.0
By guardian's occupation									
Peasant		60	52	34	9	4	5	3	167
	%	35.93	31.14	20.36	5.39	2.39	2.99	1.80	100.0
Nomad		4	2	1	1	0	0	1	9
	%	44.45	22.22	11.11	11.11	0.0	0.0	11.11	100.0
Merchant		22	16	19	5	4	1	2	69
	%	31.88	23.19	27.54	7.24	5.80	1.45	2.90	100.0
Government employee		48	40	28	4	4	1	0	125
	%	38.40	32.00	22.40	3.20	3.20	0.80	0.0	100.0
Skilled worker		16	22	16	0	3	1	1	59
	%	27.12	37.29	27.12	0.0	5.09	1.69	1.69	100.0
Unskilled worker		10	10	11	6	0	0	0	37
	%	27.03	27.03	29.73	16.21	0.0	0.0	0.0	
Others		3	10	4	0	0	0	0	17
	%	17.65	58.82	23.53	0.0	0.0	0.0	0.0	100.0
Non-response		18	15	14	5	3	2	1	58
	%	31.04	25.86	24.14	8.62	5.17	3.45	1.72	100.0

Table A.I. (cont'd)

Reasons		Need for particular professional qualification	Need for higher degree for career reasons	Desire for more study for its own sake	Lack of employment opportunities for secondary graduates	Preference for town life	Others	Non-response	TOTAL
By guardian's income									
Less than £S 250		90	85	60	16	6	4	6	267
	%	33.71	31.83	22.47	5.99	2.25	1.50	2.25	100.0
£S 250 - £S 500		45	39	29	7	6	5	0	131
	%	34.35	29.77	22.14	5.34	4.58	3.82	0.0	100.0
£S 500 - £S 1000		23	22	13	3	2	0	1	64
	%	35.94	34.38	20.31	4.69	3.12	0.0	1.56	100.0
More than £S 1000		8	8	13	1	2	1	1	34
	%	23.53	23.53	38.24	2.94	5.88	2.94	2.94	100.0
Non-response		15	13	12	3	2	0	0	45
		33.33	28.89	26.67	6.67	4.44	0.0	0.0	100.0
By sex									
Male		152	155	97	29	17	10	8	468
	%	32.49	33.12	20.73	6.19	3.63	2.13	1.71	100.0
Female		24	9	26	1	1	0	0	61
	%	39.35	14.75	42.62	1.64	1.64	0	0	100.0
Non-response		5	3	4	0	0	0	0	12
	%	41.67	25.00	33.33	0.0	0.0	0.0	0.0	100.0

Table A.I. (cont'd)

Reasons		Need for particular professional qualification	Need for higher degree for career reasons	Desire for more study for its own sake	Lack of employment opportunities for secondary graduates	Preference for town life	Others	Non-response	TOTAL
By province									
Northern		38	29	34	10	4	3	1	119
	%	31.93	24.37	28.57	8.41	3.36	2.52	0.84	100.0
Kassala		10	13	10	2	1	1	0	37
	%	31.93	35.13	27.03	5.41	2.70	2.70	0.0	100.0
Khartoum		31	29	27	4	5	2	3	101
	%	30.70	28.71	26.73	3.96	4.95	1.98	2.97	100.0
Blue Nile		46	56	33	7	2	0	4	148
	%	31.08	37.84	22.30	4.73	1.35	0.0	2.70	100.0
Kordofan		19	20	8	4	3	3	0	57
	%	33.33	35.09	14.04	7.02	5.26	5.26	0.0	100.0
Upper Nile		5	1	2	0	0	0	0	8
	%	62.50	12.50	25.00	0.0	0.0	0.0	0.0	100.0
Darfur		11	7	7	1	0	0	0	26
	%	42.31	26.92	26.92	3.85	0.0	0.0	0.0	100.0
B.El Ghazal		3	2	0	0	0	0	0	5
	%	60.0	40.0	0.0	0.0	0.0	0.0	0.0	100.0
Equatoria		11	5	3	2	2	1	0	24
	%	45.83	20.84	12.50	8.33	8.33	4.17	0	100.0
Abroad and non-response		7	5	3	0	1	0	0	16
	%	43.75	31.25	18.75	0.0	6.25	0.0	0.0	100.0

Table A.II. Distribution of students by the degree of satisfaction in getting advice on choosing a field of study for an occupational career

	Advice very satis-factory	Advice not satis-factory	Those who tried to advise did not know any better	Did not get any advice	Did not know of any organization that gave advice on career	Non-response	Total
Over-all sample	147	74	36	132	67	44	500
	% 29.4	14.8	7.2	26.4	13.4	8.8	100.0
Guardian's occupation							
Peasant	40	22	13	49	25	7	156
	% 25.64	14.10	8.33	31.41	16.03	4.49	100.0
Nomad	2	1	0	4	1	0	8
	% 25.0	12.5		50.00	12.50		100.0
Merchant	20	13	3	16	9	6	67
	% 29.85	19.40	4.48	23.88	13.43	8.96	100.0
Government employee	38	13	10	32	12	13	118
	% 32.20	11.02	8.47	27.12	10.17	11.02	100.0
Skilled worker	18	7	2	12	7	5	51
	% 35.29	13.73	3.92	23.53	13.73	9.80	100.0
Unskilled worker	9	7	2	11	5	2	36
	% 25.00	19.44	5.56	30.56	13.89	5.55	100.0
Others	13	6	4	8	7	10	48
	% 27.08	12.50	8.33	16.67	14.58	20.84	100.0

Table A.II (cont'd)

	Advice very satis-factory	Advice not satis-factory	Those who tried to advise did not know any better	Did not get any advice	Did not know of any organization that gave advice on career	Non-response	Total
By province							
Northern	35	22	5	24	14	9	109
	% 32.11	20.18	4.59	22.02	12.84	8.26	100.0
Kassala	7	8	1	11	5	3	35
	% 20.00	22.86	2.86	31.43	14.28	8.57	100.0
Khartoum	41	11	7	14	15	6	94
	% 43.62	11.70	7.45	14.89	15.96	6.38	100.0
Blue Nile	41	19	10	39	19	14	142
	% 28.88	13.38	7.04	27.46	13.38	9.86	100.0
Kordofan	9	8	3	16	9	7	52
	% 17.31	15.38	5.77	30.77	17.31	13.46	100.0
Upper Nile	3	0	0	4	1	0	8
	% 37.5			50.0	12.5		100.0
Darfur	4	6	2	7	3	2	24
	% 16.67	25.0	8.33	29.17	12.5	8.33	100.0
B.El.Ghazal	0	0	1	4	0	0	5
	%		25.00	75.0			100.0
Equatoria	2	0	3	12	1	1	19
	% 10.53		15.79	63.16	5.26	5.26	100.0
Abroad and non-response	5	0	4	1	0	2	12
	% 41.67		33.33	8.33		16.67	100.0

Table A.II (cont'd)

	Advice very satis- factory	Advice not satis- factory	Those who tried to advise did not know any better	Did not get any advice	Did not know of any organization that gave advice on career	Non- response	Total
By sex							
Male	131	69	33	111	56	32	432
	% 30.33	15.97	7.64	25.69	12.96	7.41	100.0
Female	15	5	1	18	9	9	57
	% 26.32	8.77	1.75	31.58	15.79	15.79	100.0
Non-response	1	0	2	3	2	3	11
	% 9.10		18.18	27.27	18.18	27.27	100.0
By information							
Career information received	95	38	20	52	38	22	265
	% 35.85	14.34	7.55	19.62	14.34	8.30	100.0
No career information received	43	32	14	78	25	13	205
	% 20.98	15.61	6.83	38.05	12.19	6.34	100.0
Non-response	9	4	2	2	3	9	29
	% 31.03	13.80	6.90	6.90	10.34	31.03	100.0

Table A.III. Sources of career information for applicants to post-secondary education (over-all sample and by types of students)

Sources		University or faculty employment service office	University staff	Friends, parents or relatives	Guidance counsellors	Students/ students union	Employment in the field	General information sources	Total
Over-all sample		43	51	83	15	23	75	78	368[1]
	%	11.69	13.86	22.54	4.08	6.25	20.38	21.20	100.0
Guardian's occupation									
Peasant		21	6	25	5	12	23	16	108
	%	19.44	5.56	23.15	4.63	11.11	21.30	14.81	100.0
Nomad		1	2	1	0	0	1	0	5
	%	20.0	40.0	20.0			20.0		100.0
Merchant		5	8	14	0	2	6	9	44
	%	11.36	18.18	31.82		4.55	13.64	20.45	100.0
Government employee		10	17	23	4	6	18	25	103
	%	9.71	16.50	22.33	3.88	5.83	17.48	24.27	100.0
Skilled worker		1	8	6	1	2	13	14	45
	%	2.22	17.78	13.33	2.22	4.45	28.89	31.11	100.0
Unskilled worker		3	3	6	2	0	6	5	25
	%	12.0	12.0	24.0	8.0		24.0	20.0	100.0
Others		0	1	3	0	1	1	2	8
	%		12.5	37.5		12.50	12.50	25.0	100.0
Non-response		2	6	5	3	0	7	7	30
	%	6.67	20.0	16.67	10.0		23.33	23.33	100.0
Guardian's income									
Less than £S 250		24	22	40	10	13	38	36	183
	%	13.12	12.02	21.86	5.46	7.10	20.77	19.67	100.0
£S 250 - £S 500		11	15	20	2	6	20	18	92
	%	11.96	16.30	21.74	2.17	6.52	21.74	19.57	100.0
£S 500 - £S 1,000		0	5	11	2	1	9	10	38
	%		13.16	28.95	5.26	2.63	23.68	26.32	100.0

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[1] 266 students out of 500 received just any kind of information. Multiple responses made the total no. of responses 368.

Table A.III. (cont'd)

Sources		University or faculty employment service office	University staff	Friends, parents or relatives	Guidance counsellors	Students/ students union	Employment in the field	General information sources	Total
Guardian's income (Cont'd.)									
More than €S 1,000		7	5	8	0	2	3	10	35
	%	20.0	14.29	22.86		5.71	8.57	28.57	100.0
Non-response		1	4	4	1	1	5	4	20
	%	5.0	20.0	20.0	5.0	5.0	25.0	20.0	100.0
By sex									
Male		37	43	71	13	20	63	66	313
	%	11.82	13.74	22.68	4.15	6.39	20.13	21.09	100.0
Female		6	6	11	2	2	12	10	49
	%	12.24	12.24	22.45	4.08	4.08	24.49	20.42	100.0
Non-response		0	2	1	0	1	0	2	6
	%		33.33	16.67		16.67		33.33	100.0

Table A.III (cont'd)

Sources		University or faculty employment service office	University staff	Friends, parents or relatives	Guidance counsellors	Students/ students union	Employment in the field	General information sources	Total
By province									
Northern		4	7	18	2	10	20	11	72
	%	5.56	9.72	25.0	2.77	13.89	27.78	15.28	100.0
Kassala		4	4	5	0	0	2	6	21
	%	19.05	19.05	23.81			9.52	28.57	100.0
Khartoum		9	15	22	5	3	12	22	88
	%	10.23	17.04	25.0	5.68	3.41	13.64	25.0	100.0
Blue Nile		16	20	19	4	6	27	29	121
	%	13.22	16.53	15.70	3.31	4.96	22.31	23.97	100.0
Kordofan		7	2	11	1	1	5	2	29
	%	24.14	6.89	37.93	3.45	3.45	17.25	6.89	100.0
Upper Nile		1	0	1	0	0	0	0	2
	%	50.0		50.0					100.0
Darfur		1	1	2	1	1	7	3	16
	%	6.25	6.25	12.5	6.25	6.25	43.75	18.75	100.0
B.El.Ghazal		0	0	1	0	0	0	0	1
	%			100.0					100.0
Equatoria		0	0	3	1	2	2	2	10
	%			30.0	10.0	20.0	20.0	20.0	100.0
Abroad and non-response		1	2	1	1	0	0	3	8
	%	12.5	25.0	12.5	12.5			37.5	100.0

Table A.IV. Distribution of students according to desired profession (over-all sample and by types) when they completed second level

		Natural Scientist	Engineer	Social Scientist	Humanistic Professional	Health Professional	Teacher	Businessmen	Agriculturist	Lawyer	Govt. employee	Technician	Others	Total
Over-all sample		39	108	44	16	117	47	28	24	32	22	6	17	500
	%	7.8	21.6	8.8	3.2	23.4	9.4	5.6	4.8	6.4	4.4	1.2	3.4	100.0
Guardian's occupation														
Peasant		14	42	14	2	39	17	3	10	5	4	1	5	156
	%	8.97	26.92	8.97	1.28	25.00	10.90	1.92	6.41	3.21	2.57	0.64	3.21	100.0
Nomad		-	2	-	-	2	2	-	-	-	1	-	1	8
	%		25.0			25.0	25.0				12.50		12.50	100.0
Merchant		2	10	5	2	16	4	11	3	3	3	3	4	66
	%	3.03	15.15	7.57	3.03	24.24	6.06	16.66	4.55	4.55	4.55	4.55	6.06	100.0
Government employee		13	16	14	4	30	9	6	7	13	4	1	3	120
	%	10.84	13.33	11.67	3.33	25.00	7.50	5.00	5.83	10.84	3.33	0.83	2.50	100.0
Skilled worker		3	15	5	4	10	7	2	0	3	2	0	1	52
	%	5.77	28.85	9.61	7.69	19.23	13.46	3.85		5.77	3.85		1.92	100.0
Unskilled worker		3	10	2	2	7	2	1	1	1	3	1	1	34
	%	8.83	29.41	5.88	5.88	20.59	5.88	2.94	2.94	2.94	3.83	2.94	2.94	100.0
Others		2	7	1	-	1	1	1	-	2	-	-	1	16
	%	12.50	43.75	6.25		6.25	6.25	6.25		12.50			6.25	100.0
Non-response		2	6	3	2	12	5	4	3	5	5	-	1	48
	%	4.17	12.50	6.25	4.17	25.00	10.42	8.33	6.25	10.42	10.42		2.08	100.0

Table A.IV (cont'd)

	Natural Scientist	Engineer	Social Scientist	Humanistic professional	Health professional	Teacher	Businessmen	Agriculturist	Lawyer	Govt. employee	Technician	Others	Total
Guardian's income													
Less than £S 250	18	67	19	7	71	27	7	14	7	9	2	7	255
%	7.06	26.27	7.45	2.75	27.84	10.58	2.75	5.49	2.75	3.53	0.78	2.75	100.0
£S 250 - £S 500	13	21	7	7	22	11	7	6	12	3	2	4	115
%	11.29	18.26	6.09	6.09	19.13	9.57	6.09	5.22	10.43	2.61	1.74	3.48	100.0
£S 500 - £S 1,000	3	8	6	0	13	5	9	1	7	4	0	3	59
%	5.09	13.56	10.18		22.03	8.47	15.25	1.69	11.86	6.78		5.09	100.0
More than £S 1,000	2	7	6	1	4	1	[illegible]	1	2	3	2	1	32
%	6.25	21.88	18.75	3.12	12.50	3.12	6.25	3.12	6.25	9.38	6.25	3.12	100.0
Non-response	3	5	6	1	7	3	3	2	4	3	0	2	39
%	7.69	12.82	15.39	2.56	17.95	7.69	7.69	5.13	10.26	7.69		5.13	100.0
By sex													
Male	36	101	30	15	104	36	25	23	28	19	3	14	434
%	8.29	23.28	6.91	3.46	23.97	8.29	5.76	5.30	6.45	4.38	.69	3.22	100.0
Female	2	4	13	1	13	9	2	1	2	2	3	3	55
%	3.64	7.27	23.64	1.82	23.64	16.35	3.64	1.82	3.64	3.64	5.45	5.45	100.0
Non-response	1	3	1	-	-	2	1	-	2	1	-	-	11
%	9.09	27.28	9.09			18.18	9.09		18.18	9.09			100.0

Table A.IV (cont'd)

		Natural scien-tist	Engi-neer	Social scien-tist	Huma-nistic profes-sional	Health profes-sional	Teacher	Busi-ness-men	Agri-cultur-ist	Lawyer	Govt. em-ployee	Tech-nician	Others	Total
By province														
Northern		5	26	10	4	19	12	8	7	6	4	2	3	106
	%	4.72	24.53	9.43	3.77	17.93	11.32	7.55	6.60	5.66	3.77	1.89	2.83	100.0
Kassala		2	8	3	1	6	6	-	1	3	3	2	-	35
	%	5.71	22.87	8.57	2.86	17.14	17.14		2.86	8.57	8.57	5.71		100.0
Khartoum		10	14	10	3	21	9	7	2	10	6	1	3	96
	%	10.42	14.58	10.42	3.12	21.88	9.38	7.29	2.08	10.42	6.25	1.04	3.12	100.0
Blue Nile		12	40	7	4	36	12	7	8	4	3	-	7	140
	%	8.57	28.57	5.00	2.86	25.71	8.57	5.00	5.72	2.86	2.14		5.00	100.0
Kordofan		5	11	5	1	13	3	2	1	4	5	-	3	53
	%	9.43	20.76	9.43	1.89	24.53	5.66	3.77	1.89	7.55	9.43		5.66	100.0
Upper Nile		1	-	1	-	3	2	-	1	-	-	-	-	8
	%	12.50		12.50		37.50	25.00		12.50					100.0
Darfur		2	6	1	-	10	1	1	-	3	-	1	-	25
	%	8.00	24.00	4.00		40.00	4.00	4.00		12.00		4.00		100.0
B.El.Ghazal		-	-	1	1	2	-	-	1	-	-	-	-	5
	%			20.00	20.00	40.00			20.00					100.0
Equatoria		1	-	4	2	4	1	3	3	-	1	-	-	19
	%	5.26		21.05	10.53	21.05	5.26	15.79	15.79		5.26			100.0
Abroad and non-response		1	3	2	-	3	1	-	-	2	-	-	1	13
	%	7.69	23.08	15.38		23.08	7.69			15.38			7.69	99.99

Table A.V. Reasons for being unable to take the courses leading to the desired profession

Reasons		Financial reasons	Guardian's wish	Unexpected family circumstances	More information received on career possibilities	Admission regulations	Personal reasons	Others	TOTAL
Overall sample		77	32	35	25	82	71	11	333
	%	23.12	9.61	10.51	7.51	24.63	21.32	3.30	100.0
Guardian's occupation									
Peasant		33	8	9	11	26	12	2	101
	%	32.67	7.92	8.91	10.89	25.74	11.88	1.99	100.0
Nomad		0	1	2	1	1	0	0	5
	%	0.0	20.0	40.0	20.0	20.0	0.0	0.0	100.0
Merchant		9	7	5	4	10	14	2	51
	%	17.65	13.72	9.80	7.84	19.62	27.45	3.92	100.0
Government employee		9	7	7	1	29	23	3	79
	%	11.39	8.86	8.86	1.27	36.71	29.11	3.80	100.0
Skilled worker		10	1	1	3	6	7	1	29
	%	34.48	3.45	3.45	10.34	20.69	24.14	3.45	100.0
Unskilled worker		5	5	5	2	2	7	0	26
	%	19.23	19.23	19.23	7.69	7.69	26.93	0	100.0
Others including non-response		8	3	4	3	7	7	3	35
	%	22.86	8.57	11.43	8.57	20.0	20.0	8.57	100.0

Table A.V. (cont'd)

Reasons	Financial reasons	Guardian's wish	Unexpected family circumstances	More information received on career possibilities	Admission regulations	Personal reasons	Others	TOTAL
Guardian's income								
Less than £S 250	46	13	24	16	33	26	3	161
%	28.57	8.07	14.91	9.94	20.40	16.15	1.86	100.0
£S 250 - £S 500	17	10	4	8	18	19	4	80
%	21.25	12.50	5.00	10.00	22.50	23.75	5.00	100.0
£S 500 - £S 1000	9	6	2	0	14	11	1	43
%	20.93	13.95	4.65	0.0	32.56	25.58	2.33	100.0
More than £S 1000	2	3	2	0	8	7	2	24
%	8.33	12.50	8.33	0.0	33.34	29.17	8.33	100.0
Non response	3	0	3	1	9	8	1	25
%	12.0	0.0	12.0	4.0	36.0	32.0	4.0	100.0
By sex								
Male	70	24	32	22	75	54	9	286
%	24.48	8.39	11.19	7.69	26.22	18.88	3.15	100.0
Female	4	8	3	2	6	14	1	38
%	10.53	21.06	7.89	5.26	15.79	36.84	2.63	100.0
Non-response	3	0	0	1	1	3	1	9
%	33.33	0.0	0.0	11.11	11.11	33.33	11.11	99.99

Table A.V. (cont'd)

Reasons		Financial reasons	Guardian's wish	Unexpected family circumstances	More information received on career possibilities	Admission regulations	Personal reasons	Others	TOTAL
By province									
Northern		0	1	0	2	0	1	1	5
	%	0.0	20.0	0.0	40.0	0.0	20.0	20.0	100.0
Kassala		16	5	7	7	20	16	2	73
	%	21.92	6.85	9.59	9.59	27.39	21.92	2.74	100.0
Khartoum		7	2	0	0	9	3	0	21
	%	33.33	9.52	0.0	0.0	42.86	14.29	0	100.0
Blue Nile		11	6	8	3	17	17	2	64
	%	17.19	9.37	12.50	4.69	26.56	26.56	3.13	100.0
Kordofan		25	12	10	7	19	17	1	91
	%	27.47	13.19	10.99	7.69	20.88	18.68	1.10	100.0
Upper Nile		11	5	5	2	4	6	3	36
	%	30.56	13.89	5.55	5.55	11.11	16.67	8.33	100.0
Darfur		0	0	2	1	0	1	1	5
	%	0.0	0.0	40.0	20.0	0.0	20.0	20.0	100.0
B.El.Ghazal		3	0	2	1	7	6	0	19
	%	15.79	0.0	10.53	5.26	36.84	31.58	0.0	100.0
Equatoria		0	0	0	0	3	1	0	4
	%	0.0	0.0	0.0	0.0	75.0	25.0	0	100.0
Abroad and non-response		4	1	1	2	3	3	1	15
	%	26.66	6.67	6.67	13.33	20.0	20.0	6.67	100.0

Table A.VI Distribution of students according to the degree of satisfaction in their present faculty and the adequacy of the secondary school curriculum

	Satis-factory	Fairly satis-factory	Unsatis-factory	No opinion	Total	Adequate	In-adequate	No opinion	Total
Over-all sample	246 % 49.20	126 25.20	109 21.80	19 3.80	500 100.0	236 47.20	195 39.0	69 13.80	500 100.0
Guardian's occupation									
Peasant	74 % 47.43	38 24.36	39 25.00	5 3.21	156 100.0	69 44.23	69 44.23	18 11.56	156 100.0
Nomad	3 % 37.50	4 50.00	1 12.50	0	8 100.0	5 62.50	3 37.50	0	8 100.0
Merchant	28 % 41.79	17 25.37	20 29.85	2 2.99	67 100.0	28 41.79	35 52.24	4 5.97	67 100.0
Government employee	63 % 53.39	26 22.03	24 20.34	5 4.24	118 100.0	58 49.15	42 35.59	18 15.26	118 100.0
Skilled worker	30 % 58.82	10 19.61	9 17.65	2 3.92	51 100.0	33 64.71	14 27.45	4 7.84	51 100.0
Unskilled worker	19 % 52.78	10 27.78	6 16.66	1 2.78	36 100.0	16 44.45	12 33.33	8 22.22	36 100.0
Others	7 % 43.75	7 43.75	2 12.50	0	16 100.0	6 37.5	4 25.0	6 37.5	16 100.0
Non-response	22 % 45.83	14 29.17	8 16.67	4 8.33	48 100.0	21 43.75	16 33.33	11 22.92	48 100.0
Guardian's income									
Less than £S 250	129 % 50.59	60 23.53	57 22.35	9 3.53	255 100.0	117 45.88	100 39.22	38 14.90	255 100.0
£S 250 - £S 500	53 % 46.49	30 26.32	30 26.32	1 0.87	114 100.0	60 52.63	45 39.47	9 7.90	114 100.0

Table A.VI. (cont'd)

	Satis- factory	Fairly satis- factory	Unsatis- factory	No opinion	Total	Adequate	In- adequate	No opinion	Total
Guardian's income (Cont'd.)									
£S 500 - £S 1,000	28	18	11	4	61	24	26	11	61
	% 45.90	29.51	18.03	6.56	100.0	39.34	42.62	18.04	100.0
More than £S 1,000	12	10	8	1	31	11	16	4	31
	% 38.71	32.26	25.81	3.22	100.0	35.48	51.61	12.91	100.0
Non-response	24	8	3	4	39	24	8	7	39
	% 61.54	20.51	7.69	10.26	100.0	61.54	20.51	17.95	100.0
By sex									
Male	202	114	100	16	432	202	169	61	432
	% 46.76	26.39	23.15	3.70	100.0	46.76	39.12	14.12	100.0
Female	38	10	7	2	57	30	23	4	57
	% 66.67	17.54	12.28	3.51	100.0	52.63	40.35	7.02	100.0
Non-response	6	2	2	1	11	4	3	4	11
	% 54.55	18.18	18.18	9.09	100.0	36.36	27.28	36.36	100.0
By age									
Under 20	8	5	3	1	17	7	9	1	17
	% 47.06	29.41	17.65	5.88	100.0	41.18	52.94	5.88	100.0
20 - 25 years	201	108	96	15	420	197	169	54	420
	% 47.86	25.71	22.86	3.57	100.0	46.90	40.24	12.86	100.0
25 - 30 years	27	9	8	2	46	25	14	7	46
	% 58.70	19.56	17.39	4.35	100.0	54.35	30.43	15.22	100.0
Over 30 years	6	4	0	0	10	5	2	3	10
	% 60.0	40.0			100.0	50.0	20.0	30.0	100.0
Non-response	4	0	2	1	7	2	1	4	7
	% 57.14		28.57	14.29	100.0	28.57	14.29	57.14	100.0

Table A.VI. (cont'd)

	Satisfactory	Fairly satisfactory	Unsatisfactory	No opinion	Total	Adequate	Inadequate	No opinion	Total
By province									
Northern	8	0	3	1	12	6	2	4	12
	% 66.67		25.0	8.33	100.0	50.0	16.67	33.33	100.0
Kassala	52	26	25	6	109	49	47	13	109
	% 47.71	23.85	22.94	5.51	100.0	44.95	43.12	11.93	100.0
Khartoum	18	7	10	0	35	20	10	5	35
	% 51.43	20.0	28.57		100.0	57.14	28.57	14.29	100.0
Blue Nile	47	30	14	3	94	43	31	20	94
	% 50.0	31.92	14.89	3.19	100.0	45.74	32.98	21.28	100.0
Kordofan	69	37	34	2	142	64	61	17	142
	% 48.59	26.06	23.94	1.41	100.0	45.07	42.96	11.97	100.0
Upper Nile	20	15	14	3	52	24	23	5	52
	% 38.46	28.85	26.92	5.77	100.0	46.15	44.23	9.62	100.0
Darfur	5	1	1	1	8	3	5	0	8
	% 62.50	12.5	12.5	12.5	100.0	37.5	62.0		100.0
B.El.Ghazal	12	4	7	1	24	10	10	4	24
	% 50.0	16.67	29.17	4.16	100.0	41.67	41.67	16.66	100.0
Equatoria	1	2	0	2	5	4	0	1	5
	% 20.0	40.0		40.0	100.0	80.0		20.0	100.0
Abroad and non-response	14	4	1	0	19	13	6	0	19
	% 73.69	21.05	5.26		100.0	68.42	31.58		100.0
By information									
Career information received	133	70	54	9	266	134	103	28	266
	% 50.00	26.32	20.30	3.38	100.0	50.75	38.71	10.54	100.0
No career information received	113	56	55	10	234	101	92	41	234
	% 48.29	23.93	23.51	4.27	100.0	43.16	29.32	17.52	100.0

Table A.VII. Sources of finance for students in higher education

		Financed by student through employment	Financed by family	Financed by private sources other than family	Financed by government	Financed partly by government partly other sources	Government official on study leave	Non-response	Total
Over-all sample		67	182	11	102	41	12	103	518[1]
	%	12.93	35.14	2.12	19.69	7.92	2.32	19.88	100.0
Guardian's occupation									
Peasant		13	65	4	38	8	7	26	161
	%	8.08	40.37	2.48	23.60	4.97	4.35	16.15	100.0
Nomad		1	2	1	3	1	0	0	8
	%	12.50	25.00	12.50	37.50	12.50			100.0
Merchant		6	29	0	7	8	0	17	67
	%	8.96	43.28		10.45	11.94		25.37	100.0
Government employee		17	41	0	18	10	3	31	120
	%	14.17	34.17		15.0	8.33	2.50	25.83	100.0
Skilled worker		6	17	3	11	7	0	12	56
	%	10.71	30.36	5.36	19.64	12.50		21.43	100.0
Unskilled worker		3	13	2	11	3	0	7	39
	%	7.69	33.33	5.13	28.21	7.69		17.95	100.0
Others		6	3	0	7	1	0	0	17
	%	35.29	17.65		41.18	5.88			100.0
Non-response		15	12	1	7	3	2	10	50
	%	30.0	24.0	2.0	14.0	6.00	4.00	20.0	100.0

[1] Some students had more than one source of finance

Table A.VII. (cont'd)

		Financed by student through employment	Financed by family	Financed by private sources other than family	Financed by government	Financed partly government partly other sources	Government official on study leave	Non-response	Total
Guardian's income									
Less than £S 250		23	101	6	62	14	8	51	265
	%	8.68	38.11	2.26	23.40	5.28	3.02	19.25	100.0
£S 250 - £S 500		10	38	4	19	16	0	32	119
	%	8,40	31.93	3.36	15.97	13.45		26.89	100.0
£S 500 - £S 1,000		12	22	0	10	7	3	8	62
	%	19.35	35.48		16.13	11.29	2.52	12.90	100.0
More than £S 1,000		6	13	0	4	1	0	7	31
	%	19.35	41.94		12.90	3.23		22.58	100.0
Non-response		16	8	1	7	3	1	5	41
	%	39.02	19.51	2.44	17.07	7.32	2.44	12.20	100.0
By sex									
Male		58	164	9	97	28	11	81	448
	%	12.95	36.61	2.01	21.65	6.25	2.45	18.08	100.0
Female		7	16	2	4	12	1	17	59
	%	11.86	27.12	3.39	6.78	20.34	1.69	28.82	100.0
Non-response		2	2	0	1	1	0	5	11
	%	18.18	18.18		9.09	9.09		45.46	100.0
By province									
Northern		9	39	0	20	10	3	28	109
	%	8.26	35.78		18.35	9.17	2.75	25.69	100.0
Kassala		5	11	2	6	4	2	5	35
	%	14.29	31.43	5.71	17.14	11.43	5.71	14.29	100.0
Khartoum		23	28	3	14	6	2	23	99
	%	23.23	28.29	3.03	14.14	6.06	2.02	23.23	100.0

Table A.VII. (cont'd)

		Financed by student through employment	Financed by family	Financed by private sources other than family	Financed by government	Financed partly government partly other sources	Government official on study leave	Non-response	Total
Blue Nile		12	70	5	29	6	3	25	150
	%	8.00	46.67	3.33	19.33	4.00	2.00	16.67	100.0
Kordofan		10	15	1	1[illegible]	7	0	5	54
	%	18.52	27.78	1.85	29.63	12.96		9.26	100.0
Upper Nile		1	4	0	2	0	0	1	8
	%	12.50	50.0		25.00			12.50	100.0
Darfur		3	11	0	5	1	0	5	25
	%	12.00	44.0		20.00	4.00		20.0	100.0
B.El.Ghazal		2	0	0	1	0	2	1	6
	%	33.33			16.67		33.33	16.67	100.0
Equatoria		1	2	0	9	3	0	5	20
	%	5.00	10.0		45.0	15.0		25.00	100.0
Abroad and non-response		1	2	0	0	4	0	5	12
	%	8.33	16.67			33.33		41.67	100.0

Table A.VIII. Distribution of students by type of employment they would seek in the field of their studies

		Students seeking employment in their major field of study				
		Permanently	Not permanently	No	No opinion	Total
Over-all sample		351	111	24	14	500
	%	70.20	22.20	4.80	2.80	100.0
Guardian's occupation						
Peasant		114	31	5	6	156
	%	73.08	19.87	3.20	3.85	100.0
Nomad		4	3	1	0	8
	%	50.0	37.5	12.5		100.0
Merchant		45	13	7	2	67
	%	67.16	19.40	10.45	2.99	100.0
Government employee		87	24	6	1	118
	%	73.73	20.34	5.08	0.85	100.0
Skilled worker		37	11	0	3	51
	%	72.55	21.57		5.88	100.0
Unskilled worker		24	11	1	0	36
	%	66.67	30.55	2.78		100.0
Others		11	4	0	1	16
	%	68.75	25.00		6.25	100.0
Non-response		29	14	4	1	48
	%	60.42	29.17	8.33	2.08	100.0
Guardian's income						
Less than £S 250		191	47	8	9	255
	%	74.90	18.43	3.14	3.53	100.0
£S 250 - £S 500		76	31	5	2	114
	%	66.67	27.19	4.39	1.75	100.0

Table A.VIII. (cont'd)

	Students seeking employment in their major field of study				
	Permanently	Not permanently	No	No opinion	Total
Guardian's income (Cont'd.)					
£S 500 - £S 1,000	38	18	3	2	61
%	62.29	29.51	4.92	3.28	100.0
More than £S 1,000	19	7	4	1	31
%	61.29	22.58	12.90	3.23	100.0
Non-response	27	8	4	0	39
%	69.23	20.51	10.26		100.0
By sex					
Male	305	100	16	11	432
%	70.60	23.15	3.70	2.55	100.0
Female	42	8	5	2	57
%	73.68	14.04	8.77	3.51	100.0
Non-response	4	3	3	1	11
%	36.37	27.27	27.27	9.09	100.0
By choice of faculty					
1st choice	209	51	7	7	274
%	76.28	18.62	2.55	2.55	100.0
2nd choice	54	20	5	3	82
%	65.85	24.39	6.10	3.66	100.0
3rd choice	45	34	11	3	93
%	48.39	36.56	11.83	3.22	100.0
Non-response	43	6	1	1	51
%	84.31	11.17	1.96	1.96	100.0

Table A.IX. The extent of dependence of the choice of career on the success of present study

Extend of dependence	Responses	%
Greatly	306	61.20
Somewhat dependent	115	23.00
Not dependent	38	7.60
No opinion	41	8.20
Total	500	100.00

Table A.X. The sectors in which the students expect to be employed after their education

Over-all	No.	%
Government	388	77.60
Private sector	87	17.40
Others	12	2.40
Non-response	13	2.60
Total	500	100.00

Table A.XI. Reasons for the willingness of the students to accept jobs in rural areas

	Reasons	%	Rank
Rural life needs more people like me	172	43.65	1
Opportunity for free life	46	11.68	4
Better professional prospects and experience	73	18.53	2
Financial reasons	59	14.97	3
Family or social reasons	44	11.17	5
Total	394	100.00	

Note: The number of total respondents is 361; the responses are more than the number of respondents because of the fact that there are some multiple responses.

Table A.XII. Reasons for the unwillingness to accept a job in rural areas

	Responses	%	Rank
Lack of tap water, electricity, etc.	9	5.39	6
Communication and transportation difficulties	18	10.78	4
Separation from friends and relations	25	14.97	2
No scope for your kind of skill	39	23.34	1
Rural life is dull and slow	25	14.97	2
No scope for improving competence	20	11.98	3
Delays career achievements	20	11.98	3
Others	11	6.59	5
Total	167		

Note: The number of respondents is 139. The number of responses is more than that of respondents because there are some cases of multiple responses.

Table A.XIII. Relative importance of different factors leading to the choice of career of students

	Very important		Important		Not Important		Non-response	
	No.	%	No.	%	No.	%	No.	%
Interesting work	326	65.20	94	18.80	16	3.20	64	12.80
Use special talents	151	30.20	180	36.00	77	15.40	92	18.40
Use educational background	279	55.80	146	29.20	23	4.60	52	10.40
Creative work	215	43.00	186	37.2	44	8.80	55	11.00
No supervision	56	11.20	120	24.00	245	49.00	79	15.80
Further studies	267	53.40	148	29.60	45	9.00	40	8.00
Improve competence	147	29.40	215	43.00	54	10.8	79	15.80
Helpful to others and society	306	61.20	136	27.20	24	4.80	34	6.80
Work with people	250	50.00	155	31.00	60	12.00	35	7.00
Good income	249	49.80	159	31.80	51	10.2	41	8.20
Travel	108	21.60	175	35.00	174	34.80	43	8.60
Supervise others	100	20.00	171	34.20	177	35.40	52	10.40
Promotion	226	45.20	165	33.00	53	10.60	56	11.20
Secure future	266	53.20	144	28.80	43	8.60	47	9.40
Time for family and hobbies	195	39.00	201	40.20	57	11.40	47	9.40

Table A.XIV Average ranks of the six factors providing better knowledge about the conditions of future employment

	Practical job experience during study	Personal information form prospective employers	Reading career publications	Discussion with employees in the particular occupation	Discussion with parents, friends	Consulting professional bodies	Total number of respondents
Over-all sample	1.747	3.576	3.492	3.483	4.958	3.693	383
Guardian's occupation							
Peasant	1.621	3.339	3.617	3.591	4.940	3.819	116
Nomad	1.857	3.857	3.286	3.857	5.143	3.000	7
Merchant	1.891	3.778	3.370	3.463	5.091	3.302	55
Government employee	1.863	3.653	3.396	3.396	4.905	3.811	95
Skilled worker	1.875	3.795	3.500	3.179	4.825	3.650	40
Unskilled worker	1.500	3.500	3.643	3.393	5.143	3.821	28
Others	1.583	3.833	3.000	3.916	5.083	3.500	912
Non-response	1.700	3.500	3.633	3.600	4.867	3.700	30
By sex							
Male	1.805	3.549	3.508	3.502	4.906	3.685	329
Female	1.437	3.826	3.383	3.304	5.271	3.689	48
Non-response	1.000	3.167	3.500	3.833	5.333	4.167	6

Table A.XIV. (cont'd)

	Practical job experience during study	Personal information form prospective employers	Reading career publications	Discussing employees in the particular occupation	Discussing parents, friends	Consulting professional bodies	Total number of respondents
By province of birth							
Northern	1.571	4.143	3.571	2.714	5.143	3.857	7
Kassala	1.910	3.603	3.744	3.513	4.646	3.526	78
Khartoum	1.867	3.733	3.700	3.233	5.400	3.067	30
Blue Nile	1.620	3.586	3.529	3.371	4.700	4.129	70
Kordofan	1.697	3.370	3.358	3.556	4.964	3.991	110
Upper Nile	1.707	3.450	3.439	3.585	5.325	3.425	41
Darfur	1.714	4.143	3.571	2.571	5.714	3.286	7
B.El.Ghazal	1.778	3.833	4.056	3.222	4.833	3.278	18
Equatoria	2.750	2.500	2.250	3.750	5.750	4.000	4
Abroad and non-response	1.556	4.222	2.500	4.389	5.333	3.000	18

Table A.XV. Sources of information on employment for graduates leading to first employment by sectors of employment

Sources of information	Agriculture		Industry		Transport		Public utilities & Health		Education		Housing		General administration		Other sectors	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
University authorities	21	36.21	13	12.75	10	37.04	2	15.38	10	11.11	1	25.00	5	7.25	0	0.0
Labour department	9	15.52	49	48.04	7	25.93	6	46.16	45	50.00	2	50.00	42	60.87	3	30.0
Newspaper	2	3.45	8	7.84	0	0.0	0	0.0	2	2.22	0	0.0	11	15.94	0	0.0
Personal contacts	18	31.03	25	24.51	8	29.63	4	30.77	16	17.78	1	25.0	7	10.14	5	50.0
Friends and relations	1	1.72	3	2.94	1	3.70	0	0.0	2	2.22	0	0.0	0	0.0	1	10.0
Others	7	12.07	4	3.92	1	3.70	1	7.69	15	16.67	0	0.0	4	5.80	1	10.0
TOTAL	58	100.0	102	100.0	27	100.0	13	100.0	90	100.0	4	100.0	69	100.0	10	100.0
Non-response	5		1		0		0		4		0		0		0	

Table A:XV. (cont'd)

By specialisation

Specialization	Sciences		Engi-neering		Social Sciences		Humanities & Arts		Health		Education		Commerce		Agri-culture		Law		Admin. & Others	
Source of info.	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
University authorities	1	4.0	18	37.50	9	10.98	7	8.75	4	26.67	6	22.22	4	8.33	12	41.38	0	0.0	1	10.0
Labour department	5	20.0	5	10.42	44	53.65	54	67.50	2	13.33	5	18.52	28	58.34	5	17.24	9	90.0	7	70.0
Newspaper	0	0.0	1	2.08	10	12.20	6	7.50	0	0.00	2	7.41	3	6.25	1	3.45	0	0.0	0	0.0
Personal contacts	14	56.0	17	35.41	12	14.63	10	12.50	5	33.33	3	11.11	11	22.92	10	34.46	0	0.0	2	20.0
Friends and relations	2	8.0	2	4.17	1	1.22	1	1.25	0	0.00	0	0.00	1	2.08	1	3.45	0	0.0	0	0.0
Others	3	12.0	5	10.42	6	7.32	2	2.50	4	36.67	11	40.74	1	2.08	0	0.00	1	10.0	0	0.0
Sub-total	24	100.0	48	100.0	82	100.0	80	100.0	15	100.0	27	100.0	48	100.0	29	100.0	10	100.0	10	100.0
Non-response	0		0		3		0		3		1		0		2		1		0	
Total	24		48		85		80		18		28		48		31		11		10	

Table A.XV. (cont'd)

Leading to first employment according to different professions

	Natural scientist		Engineer		Social scientist		Liberal profession		Health profession		Teacher		Business-man and manager		Agricul-turist		Lawyer		Other profes-sions	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
University authorities	1	5.88	19	38.79	7	8.14	4	9.30	4	26.67	6	12.77	4	8.16	12	41.38	0	0.0	5	17.24
Labour department	4	23.52	5	10.20	51	59.31	29	67.44	2	13.33	14	29.78	29	59.18	5	17.24	9	90.00	16	55.17
Newspaper	0	0.00	1	2.04	7	8.14	6	13.95	0	0.0	2	4.26	3	6.12	0	0.0	0	0.0	4	13.79
Personal contacts	8	47.06	17	34.69	15	17.44	2	4.65	5	33.33	13	27.66	11	22.46	11	37.93	0	0.0	2	6.90
Friends and relations	2	11.77	2	4.08	1	1.16	1	2.33	0	0.0	0	0.0	1	2.04	1	3.45	0	0.0	0	0.00
Others	2	11.77	5	10.20	5	5.81	1	2.33	4	26.67	12	25.53	1	2.04	0	0.0	1	10.00	2	6.90
Sub-total	17	100.00	49	100.00	86	100.00	43	100.0	15	100.0	47	100.0	49	100.0	29		10	100.0	29	100.00
Non-response	0		0		2		0		3		2		0		2		1		0	
Total	17		49		88		43		18		49		49		31		11		29	

Table A.XVI(a) Distribution of graduates by sector according to their father's occupation

Father's occupation	Agriculture		Industry		Transport		Public util. & health		Education		Housing		General admin.		Others	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Peasant	16	27.59	18	19.78	5	21.74	1	7.14	15	19.23	0	0.0	17	29.83	2	22.22
Nomad	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	1.75	0	0.0
Merchant	8	13.79	16	17.58	2	8.70	3	21.43	9	11.54	1	25.0	9	15.79	1	11.11
Unskilled worker	5	8.62	6	6.59	1	4.35	0	0.0	9	11.54	0	0.0	4	7.02	0	0.0
Civil servant	11	18.97	18	19.78	4	17.39	4	28.57	20	25.65	0	0.0	8	14.04	4	44.45
Clerk	1	1.72	2	2.20	0	0.0	0	0.0	2	2.56	2	50.0	1	1.75	0	0.0
Skilled worker	6	10.34	13	14.29	5	21.74	1	7.14	7	8.97	0	0.0	5	8.77	1	11.11
Others	11	18.97	18	19.78	6	26.08	5	35.72	16	20.51	1	25.0	12	21.05	1	11.11
Sub-total	58	100.0	91	100.0	23	100.0	14	100.0	78	100.0	4	100.0	57	100.0	9	100.0
No response	3		10		4		1		13		0		9		2	
Total	61		101		27		15		91		4		66		11	

Table A.XVI(a) (cont'd)

Profession / Father's occupation	Natural scientist		Engineer		Social scientist		Liberal profession		Health profession		Teacher		Business-man and manager		Agricul-turist		Lawyer		Other profes-sions	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Peasant	2	15.39	7	15.91	14	19.18	9	23.67	3	17.65	10	24.39	13	29.54	10	34.48	2	18.18	5	20.00
Nomad	0	0.00	0	0.00	1	1.37	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
Merchant	4	30.76	11	25.00	11	15.07	5	13.16	2	11.77	3	7.32	7	15.91	2	6.90	0	0.00	4	16.00
Unskilled worker	2	15.39	1	2.27	5	6.85	4	10.53	1	5.88	3	7.32	3	6.82	4	13.79	1	9.10	1	4.00
Civil servant	3	23.08	7	15.91	18	24.65	5	13.16	9	52.94	10	24.39	9	20.46	2	6.90	4	36.36	4	16.00
Clerk	0	0.00	2	4.55	3	4.11	0	0.00	0	0.00	1	2.44	0	0.00	0	0.00	0	0.00	0	0.00
Skilled worker	1	7.69	7	15.91	8	10.96	5	13.16	1	5.88	4	9.75	4	9.09	4	13.79	0	0.00	4	16.00
Others	1	7.69	9	20.45	13	17.81	10	26.32	1	5.88	10	24.39	8	18.18	7	24.14	4	36.36	7	28.00
Sub-total	13	100.00	44	100.00	73	100.00	38	100.00	17	100.00	41	100.00	44	100.00	29	100.00	11	100.00	25	100.00
Non-response	1		4		10		6		1		8		5		2		0		4	
Total	14		48		83		44		18		49		49		31		11		29	

Table A.XVI(a) (cont'd)

Specialization / Father's occupation	Sciences		Engineering		Social Sciences		Humanities & Arts		Health		Education		Business & Commerce		Agriculture		Law		Admin. & Others	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Peasant	4	21.05	6	13.95	11	15.94	18	26.09	3	17.65	4	14.82	14	32.56	11	37.92	2	18.19	2	25.00
Nomad	0	0.0	0	0.0	1	1.45	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Merchant	5	26.32	11	25.57	11	15.94	11	15.94	2	11.77	1	3.70	5	11.63	2	6.90	0	0.0	1	12.50
Unskilled worker	3	15.79	1	2.33	4	5.80	6	8.70	1	5.88	3	11.11	2	4.65	3	10.35	1	9.09	1	12.50
Civil servant	4	21.05	8	18.61	18	26.09	8	11.59	9	52.94	7	25.93	10	23.26	2	6.90	4	36.36	1	12.50
Clerk	0	0.00	2	4.65	2	2.90	1	1.45	0	0.0	1	3.70	0	0.0	0	0.0	0	0.0	0	0.0
Skilled worker	1	5.26	7	16.28	9	13.04	8	11.59	1	5.88	2	7.41	5	11.63	4	13.79	0	0.0	1	12.50
Others	2	10.53	8	18.61	13	18.84	17	24.64	1	5.88	9	33.33	7	16.28	7	24.14	4	36.36	2	25.00
Sub-total	19	100.00	43	100.00	69	100.00	69	100.00	17	100.00	27	100.00	43	100.00	29	100.00	11	100.00	8	100.00
Non-response	3		4		11		11		1		1		5		2		0		2	
Total	22		47		80		80		18		28		48		31		11		10	

Table A-XVII. Range of waiting period for graduates between graduation and first employment by different types

By age-group

Waiting period	Less than 25 years		More than 25 but Less than 30		More than 30 but Less than 35		More than 35 but Less than 40		More than 40		Age unknown	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Less than 6 months	56	84.85	153	74.63	41	84.42	16	84.21	10	90.91	11	78.57
More than 6 months but less than 1 year	10	15.15	36	17.56	6	12.50	3	15.79	1	9.09	2	14.29
More than 1 year	0	0.00	16	7.81	1	2.08	0	0.00	0	0.00	1	7.14
Sub-total	66	100.00	205	100.00	48	100.00	19	100.00	11	100.00	14	100.00
Non-response	5		3		1		1		0		3	
Total	71		208		49		20		11		17	

Table A.XVII. (cont'd)

Professions	Natural scientist		Engineer		Social scientist		Liberal profession		Health profession		Teacher		Business-man and manager		Agricul-turist		Lawyer		Other profes-sion	
Waiting period	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Less than 6 months	13	92.86	45	95.75	61	77.22	23	52.27	18	100.00	37	86.05	39	79.59	31	100.00	1	10.00	19	67.8
More than 6 months but less than 1 year	1	7.14	2	4.25	11	13.92	15	34.09	0	0.00	5	11.63	9	18.37	0	0.00	6	60.00	9	32.1
More than 1 year	0	0.00	0	0.00	7	8.86	6	13.64	0	0.00	1	2.32	1	2.04	0	0.00	3	30.00	0	0.0
Sub-total	14	100.00	47	100.00	79	100.00	44	100.00	18	100.00	43	100.00	49	100.00	31	100.00	10	100.00	28	100.0
Non-response	0		1		4		0		0		6		0		0		1		1	
Total	14		48		83		44		18		49		49		31		11		29	

Table A.XVII. (cont'd)

By sector

Sector / Waiting Period	Overall		Agriculture		Industry		Transport		Pub. util. & Health		Education		Housing		General admin.		Others	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Less than 6 months	287	79.06	59	96.72	84	84.85	25	92.59	11	73.33	59	72.84	3	75.0	41	62.12	4	50.00
More than 6 months but less than 1 year	58	15.98	1	1.64	13	13.13	2	7.41	3	20.00	16	19.75	1	25.00	18	27.27	4	40.00
More than 1 year	18	4.96	1	1.64	2	2.02	0	0.00	1	6.67	6	7.41	0	0.0	7	10.61	1	10.00
Sub-total	363	100.0	61	100.0	99	100.0	27	100.0	15	100.0	81	100.0	4	100.0	66	100.0	9	100.00
Non-response	13				3						10							
Total	376		61		102		27		15		91		4		66		9	

Table A.XVII. (cont'd)

By degree

Waiting period	B.A., B.Sc. B.Com.		M.A., M.Sc., M.Com., Ph.D.		Professional degrees (1)		Graduate diploma		Post-graduate diploma		Other certificates	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Less than 6 months	112	72.26	16	72.73	63	94.03	68	93.15	11	78.57	17	53.12
More than 6 months but less than 1 year	37	23.87	6	27.27	4	5.97	3	4.11	3	21.43	5	15.63
More than 1 year	6	3.87	0	0.0	0	0.0	2	2.74	0	0.0	10	31.25
Sub-total	155	100.0	22	100.0	67	100.0	73	100.0	14	100.0	32	100.0
Non-response	5		0		1		5		0		2	
TOTAL	160		22		68		78		14		34	

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(1) Includes B.Ed., B.L., B.Sc.(Agri), B.Vet.Sc.,

Table A.XVIII. The distribution of graduates having different specializations and professions (Overall and percentages)

Overall

Profession / Specialization	Natural scientist	Engineer	Social scientist	Liberal profession	Health profession	Teacher	Businessman Manager	Agricul-turist	Lawyer	Others	TOTAL
Natural Science	14	1	0	0	0	4	1	2	0	0	22
Engineering	0	45	0	0	0	2	0	0	0	0	47
Social sciences	0	1	65	1	0	3	3	0	0	7	80
Humanities & Arts	0	0	13	40	0	14	1	0	0	12	80
Health	0	0	0	0	18	0	0	0	0	0	18
Education & teacher training	0	0	1	1	0	26	0	0	0	0	28
Business & Commerce	0	0	3	0	0	0	43	0	0	2	48
Agriculture	0	1	0	0	0	0	0	29	0	1	31
Law	0	0	0	0	0	0	0	0	11	0	11
Others	0	0	1	2	0	0	1	0	0	7	11
TOTAL	14	48	83	44	18	49	49	31	11	29	376

Table A.XVIII. (cont'd)

Percentage of graduates in various professions according to their specialization

Specialization \ Profession	Natural scientist	Engineer	Social scientist	Liberal profession	Health profession	Teacher	Business-man Manager	Agricul-turist	Lawyer	Others
Natural Science	100.0	2.08	0	0	0	8.16	2.04	6.45	0	0
Engineering	0	93.76	0	0	0	4.08	0	0	0	0
Social sciences	0	2.08	78.31	2.27	0	6.12	6.12	0	0	24.14
Humanities & Arts	0	0	15.66	90.91	0	28.57	2.04	0	0	41.38
Health	0	0	0	0	100.0	0	0	0	0	0
Education & Teacher training	0	0	1.21	2.27	0	53.07	0	0	0	0
Business & Commerce	0	0	3.61	0	0	0	87.76	0	0	6.90
Agriculture	0	2.08	0	0	0	0	0	93.55	0	3.45
Law	0	0	0	0	0	0	0	0	100.0	0
Others	0	0	1.21	4.55	0	0	2.04	0	0	24.14

Table A.XVIII (cont'd)

Percentage of graduates by profession in the various specialization categories

Profession / Specialization	Natural scientist	Engineer	Social scientist	Liberal profession	Health profession	Teacher	Businessman Manager	Agriculturist	Lawyer	Others	TOTAL
Natural Science	63.64	4.55	0	0	0	18.18	4.55	9.08	0	0	
Engineering	0	95.74	0	0	0	4.26	0	0	0	0	
Social Sciences	0	1.25	81.25	1.25	0	3.75	3.75	0	0	8.75	
Humanities & Arts	0	0	16.25	50.00	0	17.50	1.25	0	0	15.0	
Health	0	0	0	0	100.0	0	0	0	0	0	
Education & teacher training	0	0	3.57	3.57	0	92.86	0	0	0	0	
Business & Commerce	0	0	6.25	0	0	0	89.58	0	0	4.17	
Agriculture	0	3.23	0	0	0	0	0	93.24	0	3.23	
Law	0	0	0	0	0	0	0	0	100.0	0	
Others	0	0	9.09	18.18	0	0	9.09	0	0	63.64	

Table A.XIX. Reasons given by graduates for undertaking post-secondary education

Overall

Reasons	Number of responses	Percentage
Need for a particular professional qualification	151	31.71
Need for a higher degree for career reasons	153	32.14
Desire for more study for its own sake	81	17.02
Desire to continue participating in student life	10	2.10
Financial incentives offered by government or non-governmental agency	51	10.71
Lack of employment opportunities for secondary school graduates	16	3.36
Preference for urban life	14	2.94
Total	476	99.99

Table A.XIX. (cont'd)

By profession

	Natural scientist		Engineer		Social scientist		Liberal profession		Health profession		Teacher		Business-men and manager		Agricul-turist		Lawyer		Other professions	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Need for a particular professional qualification	5	25.00	23	39.65	33	28.95	16	28.07	7	21.87	19	39.58	22	34.92	11	28.95	4	36.36	11	31.42
Need for a higher degree for career reasons	10	50.00	16	17.59	39	34.21	16	28.07	8	25.00	14	29.17	22	34.92	13	34.21	1	9.09	14	40.00
Desire for more study for its own sake	3	15.00	9	15.52	23	20.18	13	22.81	5	15.63	6	12.50	8	12.69	7	18.42	4	36.36	3	8.57
Desire to continue participating in student life	0	0.00	5	8.62	0	0.00	2	3.51	0	0.00	1	2.08	0	0.00	0	0.00	0	0.00	2	5.72
Financial incentives offered by government or non-governmental agencies	1	5.00	3	5.17	13	11.40	5	8.77	9	28.12	5	10.42	8	12.70	5	13.16	1	9.09	1	2.86
Lack of employment opportunities for secondary school graduates	1	5.00	2	3.45	2	1.75	3	5.26	2	6.25	2	4.17	2	3.18	1	2.63	0	0.00	1	2.86
Preference for urban life	0	0.00	0	0.00	4	3.51	2	3.51	1	3.13	1	2.08	1	1.59	1	2.63	1	9.09	3	8.57
Total	20	100.00	58	100.00	114	100.00	57	100.00	32	100.00	48	100.00	63	100.00	38	100.00	11	100.00	35	100.00

Table A.XIX. (cont'd)

By sector

Reasons	Agriculture		Industry		Transport		Pub. util. & Health		Education		Housing		General admin.		Others	
	No. of replies	%	No. of replies	%	No. of replies	%	No. of replies	%	No. of replies	%	No. of replies	%	No. of replies	%	No. of replies	%
Need for a particular professional qualification	24	29.27	43	31.39	16	42.11	5	31.25	41	37.26	1	33.33	18	22.78	3	30.00
Need for a higher degree for career reasons	26	31.71	45	32.84	8	21.05	7	43.75	31	28.18	1	33.33	29	36.71	5	50.00
Desire for more study for its own sake	14	17.07	21	15.33	7	18.42	3	18.75	15	13.64	1	33.33	19	24.06	1	10.00
Desire to continue participating in student life	1	1.22	4	2.92	1	2.63	0	0.0	2	1.82	0	0.0	2	2.53	0	0.0
Financial incentives offered by government or non-governmental agencies	13	15.85	14	10.22	4	10.53	1	6.25	13	11.82	0	0.0	6	7.59	0	0.0
Lack of employment opportunities for secondary school graduates	3	3.66	6	4.38	0	0.0	0	0.0	5	4.55	0	0.0	1	1.27	1	10.00
Preference for urban life	1	1.22	4	2.92	2	5.26	0	0.0	3	2.73	0	0.0	4	5.06	0	0.0

Table A.XIX. (cont'd)

By specialization

Reasons	Sciences		Engineering		Social Sciences		Humanities & Arts		Health		Education		Commerce		Agriculture		Law		Admin. & Others	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Need for a particular professional qualification	7	22.58	24	42.86	30	29.13	26	27.96	7	21.87	15	41.66	23	34.84	11	29.73	4	36.36	4	30.77
Need for a higher degree for career reasons	13	41.94	13	23.21	35	33.98	33	35.48	8	25.00	10	27.77	22	33.33	13	35.14	1	9.09	5	38.47
Desire for more study for its own sake	6	19.35	9	16.07	19	18.45	19	20.43	5	15.63	2	5.56	8	12.12	7	18.92	4	36.36	2	15.38
Desire to continue participating in student life	0	0.0	4	7.14	1	0.97	4	4.30	0	0.0	0	0.0	1	1.52	0	0.0	0	0.0	0	0.0
Financial incentives offered by government or non-governmental agencies	2	6.45	3	5.36	12	11.65	6	6.45	9	28.12	5	13.89	9	13.64	4	10.81	1	0.09	0	0.0
Lack of employment opportunities for secondary school graduates	3	9.68	1	1.79	3	2.91	1	1.08	2	6.25	2	5.56	2	3.03	1	2.70	0	0.0	1	7.69
Preference for urban life	0	0.0	2	3.57	3	2.91	4	4.30	1	3.13	2	5.56	1	1.52	1	2.70	1	9.09	1	7.69
Total	**31**	**100.0**	56	100.0	103	100.0	**93**	100.0	32	100.0	36	100.0	56	100.0	37	100.0	11	100.0	13	100.0

Table A.XIX. (cont'd)

By degree

Reasons	B.A., B.Sc., B.Com.		M.A., M.Sc., M.Com.,Ph.D.		Professional degrees (1)		Graduate diploma		Post-graduate diploma		Other certificates	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Need for a particular professional qualification	46	25.00	11	42.86	29	29.90	45	45.46	7	31.81	10	24.39
Need for a higher degree for career reasons	66	35.87	11	42.86	29	29.90	22	22.22	7	31.81	16	39.02
Desire for more study for its own sake	38	20.65	2	7.14	18	18.56	11	11.11	[illegible]	13.64	7	17.07
Desire to continue participating in student life	3	1.63	0	0.0	2	2.06	3	3.03	1	4.55	1	2.44
Financial incentives offered by government or non-governmental agencies	19	10.33	0	0.0	14	14.43	12	12.12	2	9.09	4	9.76
Lack of employment opportunities for secondary graduates	6	3.26	2	7.14	3	3.09	4	4.04	1	4.55	0	0.0
Preference for urban life	6	3.26	0	0.0	2	2.06	2	2.02	1	4.55	3	7.32
TOTAL	184	100.0	26	100.0	97	100.0	99	100.0	22	100.0	41	100.0

(1) Includes B.Ed., B.L., B.Sc.(Agri.), B. Vet.Sc.

Table A.XX Scores of different factors causing respondents to change from their desired specialization

Overall

Reasons	Number of graduates	Percentage
Financial reasons	35	15.35
Family resistance	12	5.58
Subsequently received better information on career possibilities	37	17.21
Personal reasons	42	19.53
Unexpected family resistance	3	1.40
University admission regulations	82	38.14
Others	6	2.79
Total	215	100.0

Note: There are some multiple responses. Number of graduates who changed specialization was 183.

Table A.XX (cont'd)

By age-group

Age	Less than 25		25 to 30		30 to 35		35 to 40		More than 40		Age unknown	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Financial reasons	12	24.00	17	14.29	1	3.57	3	25.00	0	0.00	0	0.00
Family resistance	4	8.00	7	5.88	1	3.57	0	0.00	0	0.00	0	0.00
Subsequently received better information on career possibilities	5	10.00	20	16.80	6	21.43	5	41.67	1	33.33	0	0.00
Personal reasons	7	14.00	22	18.49	10	35.72	1	8.33	1	33.33	1	33.33
Unexpected family circumstances	0	0.00	1	0.84	2	7.14	0	0.00	0	0.00	0	0.00
University admission regulations	22	44.00	47	39.50	7	25.00	3	25.00	1	33.33	2	66.67
Others	0	0.00	5	4.20	1	3.57	0	0.00	0	0.00	0	0.00
Total	50	100.00	119	100.00	28	100.00	12	100.00	3	100.00	3	100.00

Table A.XXI. Relative importance of the reasons causing graduates to change jobs

Overall

Reasons	Number of graduates	Percentage
Better service conditions	24	21.62
Better future	43	38.74
Better use of training	19	17.17
Suits personal aptitudes	14	12.61
Loss of job	1	0.90
Former job was temporary	1	0.90
Social reasons	3	2.70
Others	6	5.41
Total	111	100.0

Table A.XXI. (cont'd)

By degree

	B.A., B.Sc., B.Com.		M.A., M.Sc., M.Com.,Ph.D.		Professional degrees (1)		Graduate diploma		Post-graduate diploma		Other certi- ficates	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Better service conditions	15	24.19	0	0.0	0	0.0	6	28.57	0	0.0	3	18.75
Better future	26	41.94	1	25.00	1	25.00	6	28.57	1	25.00	8	50.00
Better use of training	11	17.74	2	50.00	0	0.0	5	23.81	0	0.0	1	6.25
Suits personal aptitudes	5	8.07	1	25.00	1	25.00	4	19.05	1	25.00	2	12.05
Loss of job	1	1.61	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Former job was temporary	0	0.0	0	0.0	1	25.00	0	0.0	0	0.0	0	0.0
Social reasons	1	1.61	0	0.0	1	25.00	0	0.0	1	25.00	0	0.0
Others	3	4.84	0	0.0	0	0.0	0	0.0	1	25.00	2	12.05
Sub-total	62	100.0	4	100.0	4	100.0	21	100.0	4	100.0	15	100.0

(1) includes B.Ed., B.L., B.Sc.(Agri), B.Vet.Sc.

Table A.XXI. (cont'd)

By age-group

	Less than 25 years		More than 25 but Less than 30		More than 30 but Less than 35		More than 35 but Less than 40		More than 40		Age unknown	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Better service conditions	6	30.00	12	19.67	4	20.00	1	16.67			1	25.00
Better Future	7	35.00	29	47.54	5	25.00	1	16.67			1	25.00
Better use of training	3	15.00	9	14.75	5	25.00	1	16.67			1	25.00
Suits personal aptitudes	3	15.00	6	9.84	3	15.00	2	33.33			0	0.00
Loss of job	0	0.00	0	0.00	1	5.00	0	0.00			0	0.00
Former job was temporary	0	0.00	0	0.00	1	5.00	0	0.00			0	0.00
Social reasons	1	5.00	1	1.64	0	0.00	1	16.67			0	0.00
Others	0	0.00	4	6.56	1	5.00	0	0.00			1	25.00
Total	20	100.00	61	100.00	20	100.00	6	100.00			4	100.00

Table A.XXII. Different sources for financing post-secondary education

Overall

	Number of responses	Percentage
Privately, through employment	50	12.89
Government sources	172	44.33
Privately, sources other than family	8	2.06
Privately, by family	136	35.05
Others	22	5.67
Total	388	100.00

N.B. The total response is more than 376 because there are some multiple responses from some of the graduates. (Total non-responses are 16).

Table A.XXIII. Opinions of graduates regarding the relevance of the educational system to the needs of the job

Overall and by sector

	Overall		Agriculture		Industry		Transport		Pub. util. & health		Education		Housing		General admin.		Others	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Relevant	199	52.93	44	72.13	52	50.99	20	74.08	11	73.33	38	41.76	3	75.00	26	38.81	5	50.00
Fairly relevant	129	34.31	11	18.03	37	36.27	5	18.52	3	20.00	33	36.26	1	25.00	36	53.72	3	30.00
Irrelevant	19	5.05	0	0.0	4	3.92	1	3.70	1	6.67	10	10.99	0	0.00	2	2.99	0	0.0
No opinion	29	7.71	6	9.84	9	8.82	1	3.70	0	0.0	10	10.99	0	0.0	3	4.48	2	20.00
Total	376	100.00	61	100.00	102	100.00	27	100.00	15	100.00	91	100.00	4	100.00	67	100.00	8	100.00

By age-group

	Less than 25		25 to 30		30 to 35		35 to 40		More than 40		Age unknown	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Relevant	38	61.28	100	51.55	27	56.25	16	80.00	10	90.91	8	66.67
Fairly relevant	19	30.65	81	41.75	20	41.67	4	20.00	1	9.09	4	33.33
Irrelevant	5	8.07	13	6.70	1	2.08	0	0.00	0	0.00	0	0.00
Sub-total	62	100.00	194	100.00	48	100.00	20	100.00	11	100.00	12	100.00
Non-response	9		14		1		0		0		5	
Total	71		208		49		20		11		17	

Table A.XXIV. The importance of the different criteria of recruitment (over-all sample and by type) by employers

	Very Important		Important		Unimportant		No opinion	
	No.	%	No.	%	No.	%	No.	%
Over-all								
Academic record	38	74.51	8	15.69	1	1.96	4	7.84
Aptitude tests	14	27.45	14	27.45	6	11.76	17	33.33
Interview	26	50.98	19	37.25	1	1.96	5	9.80
Past experience in similar job	17	33.33	20	39.22	5	9.80	9	17.65
Letter of recommendation	2	3.92	8	15.69	26	50.98	15	29.41
Physical aptitude	8	15.69	16	31.37	15	29.41	12	23.53
Others	2	3.92	1	1.96	2	3.92	46	90.20
Date of establishment up to 1955								
Academic record	6	66.67	3	33.33	0	0.00	0	0.00
Aptitude tests	3	33.33	4	44.44	0	0.00	2	22.22
Interview	5	55.56	4	44.44	0	0.00	0	0.00
Past experience in similar job	2	22.22	5	55.56	1	11.11	1	11.11
Letter of recommendation	1	11.11	1	11.11	6	66.67	1	11.11
Physical aptitude	1	11.11	6	66.67	2	22.22	0	0.00
Others	0	0.00	0	0.00	0	0.00	9	100.00
Date of establishment between 1956 and 1969								
Academic record	19	79.17	3	12.50	0	0.00	2	8.33
Aptitude tests	6	25.00	5	20.83	3	12.50	10	41.67
Interview	12	50.00	10	41.67	0	0.00	2	8.33
Past experience in similar job	8	33.33	12	50.00	0	0.00	4	16.67
Letter of recommendation	0	0.00	6	25.00	11	45.83	7	29.17
Physical aptitude	3	12.50	9	37.50	6	25.00	6	25.00
Others	1	4.17	1	4.17	1	4.17	21	87.50

Cont'd.

Table A.XXIV (cont'd)

	Very Important		Important		Unimportant		No opinion	
	No.	%	No.	%	No.	%	No.	%
Date of establishment after 1969								
Academic record	6	66.67	1	11.11	1	11.11	1	11.11
Aptitude tests	5	55.56	3	33.33	1	11.11	0	0.00
Interview	6	66.67	2	22.22	1	11.11	0	0.00
Past experience in similar job	5	55.56	1	11.11	2	22.22	1	11.11
Letter of recommendation	1	11.11	1	11.11	5	55.56	2	22.22
Physical aptitude	3	33.33	0	0.00	4	44.44	2	22.22
Others	0	0.00	0	0.00	0	0.00	9	100.00
Date of establishment not known								
Academic record	7	77.78	1	11.11	0	0.00	1	11.11
Aptitude tests	0	0.00	2	22.22	2	22.22	5	55.56
Interview	3	33.33	3	33.33	0	0.00	3	33.33
Past experience in similar job	2	22.22	2	22.22	2	22.22	3	33.33
Letter of recommendation	0	0.00	0	0.00	4	44.44	5	55.56
Physical aptitude	1	11.11	1	11.11	3	33.33	4	44.44
Others	1	11.11	0	0.00	1	11.11	7	77.78
Government control								
Academic record	27	77.14	5	14.29	0	0.00	3	8.57
Aptitude tests	10	28.57	7	20.00	3	8.57	15	42.86
Interview	20	57.14	10	28.57	0	0.00	5	14.29
Past experience in similar job	10	28.57	15	42.86	2	5.71	8	22.86
Letter of recommendation	0	0.00	7	20.00	16	45.71	12	34.29
Physical aptitude	7	20.00	7	20.00	11	31.43	10	28.57
Others	1	2.86	0	0.00	1	2.86	33	94.29

Cont'd.

Table A.XXIV (cont'd)

	Very Important		Important		Unimportant		No opinion	
	No.	%	No.	%	No.	%	No.	%
Semi-government control								
Academic record	7	77.78	2	22.22	0	0.00	0	0.00
Aptitude tests	2	22.22	4	44.44	1	11.11	2	22.22
Interview	6	66.67	3	33.33	0	0.00	0	0.00
Past experience in similar job	4	44.44	2	22.22	2	22.22	1	11.11
Letter of recommendation	2	22.22	1	11.11	5	55.56	1	11.11
Physical aptitude	1	11.11	4	44.44	3	33.33	1	11.11
Others	0	0.00	0	0.00	0	0.00	9	100.00
Private control								
Academic record	2	40.00	1	20.00	1	20.00	1	20.00
Aptitude tests	2	40.00	3	60.00	0	0.00	0	0.00
Interview	0	0.00	4	80.00	1	20.00	0	0.00
Past experience in similar job	2	40.00	3	60.00	0	0.00	0	0.00
Letter of recommendation	0	0.00	0	0.00	3	60.00	2	40.00
Physical aptitude	0	0.00	3	60.00	1	20.00	1	20.00
Others	0	0.00	0	0.00	0	0.00		
Above 1,000 employees								
Academic record	4	50.00	2	25.00	0	0.00	2	25.00
Aptitude tests	0	0.00	2	25.00	0	0.00	6	75.00
Interview	4	50.00	2	25.00	0	0.00	2	25.00
Past experience in similar job	1	12.50	2	25.00	0	0.00	5	62.50
Letter of recommendation	0	0.00	0	0.00	3	37.50	5	62.50
Physical aptitude	1	12.50	2	25.00	1	12.50	4	50.00
Others	2	25.00	0	0.00	0	0.00	6	75.00

Cont'd.

Table A.XXIV (cont'd)

	Very Important		Important		Unimportant		No opinion	
	No.	%	No.	%	No.	%	No.	%
Above 100 employees								
Academic record	9	75.00	2	16.67	0	0.00	1	8.33
Aptitude tests	6	50.00	3	25.00	1	8.33	2	16.67
Interview	9	75.00	3	25.00	0	0.00	0	0.00
Past experience in similar job	3	25.00	7	58.33	2	16.67	0	0.00
Letter of recommendation	2	16.67	2	16.67	6	50.00	2	16.67
Physical aptitude	3	25.00	1	8.33	6	50.00	2	16.67
Others	0	0.00	0	0.00	0	0.00	12	100.00
Below 100 employees								
Academic record	17	80.95	3	14.29	0	0.00	1	4.76
Aptitude tests	6	28.57	6	28.57	3	14.29	6	28.57
Interview	7	33.33	12	57.14	0	0.00	2	9.52
Past experience in similar job	8	38.10	8	38.10	2	9.52	3	14.29
Letter of recommendation	0	0.00	4	19.05	13	61.90	4	19.05
Physical aptitude	3	14.29	9	42.85	5	23.81	4	19.05
Others	0	0.00	1	4.76	0	0.00	20	95.24
Number of employees unknown								
Academic record	8	80.00	1	10.00	1	10.00	0	0.00
Aptitude tests	2	20.00	3	30.00	2	20.00	3	30.00
Interview	6	60.00	2	20.00	1	10.00	1	10.00
Past experience in similar job	5	50.00	3	30.00	1	10.00	1	10.00
Letter of recommendation	0	0.00	2	20.00	4	40.00	4	40.00
Physical aptitude	1	10.00	4	40.00	3	30.00	2	20.00
Others	0	0.00	0	0.00	0	0.00	10	100.00

Cont'd.

Table A.XXIV (cont'd)

	Very Important		Important		Unimportant		No opinion	
	No.	%	No.	%	No.	%	No.	%
Teaching								
Academic record	6	85.71	0	0.00	0	0.00	1	14.29
Aptitude tests	1	14.29	1	14.29	1	14.29	4	57.14
Interview	1	14.29	3	42.86	0	0.00	3	42.86
Past experience in similar job	4	57.14	1	14.29	0	0.00	2	28.57
Letter of recommendation	0	0.00	0	0.00	4	57.14	3	42.86
Physical aptitude	0	0.00	4	57.14	0	0.00	3	42.86
Others	0	0.00	1	14.29	0	0.00	6	85.71
Service								
Academic record	27	77.14	6	17.14	0	0.00	2	5.71
Aptitude tests	11	31.43	7	20.00	4	11.43	13	37.14
Interview	23	65.71	10	28.57	0	0.00	2	5.71
Past experience in similar job	8	22.86	16	45.71	4	11.43	7	20.00
Letter of recommendation	2	5.71	7	20.00	17	48.57	9	25.71
Physical aptitude	8	22.86	7	20.00	12	34.29	8	22.86
Others	0	0.00	0	0.00	1	2.86	34	97.14
Production								
Academic record	5	55.56	2	22.22	1	11.11	1	11.11
Aptitude tests	2	22.22	6	66.67	1	11.11	0	0.00
Interview	2	22.22	6	66.67	1	11.11	0	0.00
Past experience in similar job	5	55.56	3	33.33	1	11.11	0	0.00
Letter of recommendation	0	0.00	1	11.11	5	55.56	3	33.33
Physical aptitude	0	0.00	5	55.56	3	33.33	1	11.11
Others	2	22.22	0	0.00	1	11.11	6	66.67

Appendix II

STUDENT QUESTIONNAIRE

I. EDUCATIONAL BACKGROUND

1. Secondary school :

Certificate : Year of graduation :

2. When you completed your secondary school education you wanted to be :

1) Natural scientist ☐
2) Engineer ☐
3) Social scientist ☐
4) Humanistic professional ☐
5) Health professional ☐
6) Teacher ☐
7) Businessman and Manager ☐
8) Agriculturist ☐
9) Lawyer ☐
10) Government employee *) ☐
11) Technician ☐
12) Others (specify) ☐

x) If you wanted to belong to any other profession which would still make you a government employee, please check both boxes. A list of the fields leading to each profession is attached at the end of this questionnaire.

3. You are at present in :

First year ☐
Second year ☐
Third year ☐
Fourth year ☐
Fifth year ☐
Sixth year ☐
General ☐
Honours ☐
Not applicable ☐

Faculty of .... at ....

....

(name of the institution you are attending)

4. Reason for your undertaking higher education was :

1. Need for a particular professional qualification ☐
2. Need for a degree for career reasons ☐
3. Desire for more study for its own sake ☐
4. Lack of employment opportunities for secondary graduates ☐
5. Preference for town life ☐
6. Others (specify) ☐

5. If there was a change in the choice of the field leading to your desired profession mentioned above it was due to :

1. Financial reasons ☐
2. Guardian's wish ☐
3. Unexpected family circumstances (e.g. death, changes of residence, etc.) ☐
4. More information received on career possibilities later ☐
5. Admission regulations ☐
6. Personal reasons ☐
7. Others (specify ☐

6. Do you receive scholarship/bursary ? YES ☐ NO ☐

If yes, please state the amount per year £S ....

7. Do you consider the courses studied in your secondary school in relation to the courses you are attending in the institution of higher education are :

1. Adequate ☐ 2. Inadequate ☐

8.(a) Your faculty now is your :

1. first choice ☐ 2. second choice ☐ 3. third choice ☐

(b) Your faculty now is :

1. very satisfactory ☐ 2. fairly satisfactory ☐
3. unsatisfactory ☐

9. Are you employed : Full time ☐ Part-time ☐

(a) In case of part-time, please give no. of hours per day or days per month or months per year of work and state the amount of money received per year.

£S ....

(b) In case of full time, please state annual salary plus COLA*)?

£S ....

10. Source(s) of finance for your higher education :

1. Financed by the family ☐
2. Financed by you through employment ☐
3. Financed by private sources other than family ☐
4. Financed by government sources ☐
5. Financed partly by government partly by other sources ☐
6. You are a government official on study leave ☐

11. Are you a boarding student ? YES ☐ NO ☐

---

*) Cost of living allowance.

12. When you have completed your education, do you intend to seek employment in your major field of study ?

Yes, permanently ☐ Yes, but not permanently ☐ No ☐

13. If you do not expect to be permanently employed in your present major field, why do you remain in this field ?

1. the field gives you good career preparation ☐
2. you enjoy the field ☐
3. the field gives you a wider choice of future careers ☐
4. it was a mistake to choose the field, but it is too late to change ☐
5. other reasons (specify) ☐

14. If you were not in this institute, assuming you were working to-day in a full time permanent job, then your salary would be :

Less than £S150 ☐ £S150-250 ☐
£S250-350 ☐ more than £S350 ☐

II. SOCIO-ECONOMIC BACKGROUND

1. Your guardian is :

1. Father ☐ 2. Brother ☐ 3. Mother ☐
4. Uncle ☐ 5. Other than these ☐

2. Your guardian's occupation is :

1. Peasant ☐ 2. Nomad ☐ 3. Merchant ☐
4. Government employee ☐ 5. Clerical ☐
6. Skilled worker ☐ 7. Unskilled worker ☐ 8. Others (specify) ☐

3. Your guardian is in :

1. full employment ☐ 2. retired on pension ☐
3. part-time employed ☐ 4. unemployed ☐

4. Your guardian's approx. yearly income is :

1. less than £S250 ☐ 2. £S250-500 ☐
3. £S500-1000 ☐ 4. more than £S1000 ☐

5. You are : Married ☐ Unmarried ☐ Divorced ☐

6. You have children YES ☐ NO ☐

7. You are : male ☐ female ☐

8. You age is :

1. under twenty ☐ 2. Between twenty and twenty five ☐
3. between twenty five and thirty ☐ 4. above thirty ☐

9. Your province of birth is :

1. Northern ☐ 2. Kassala ☐ 3. Khartoum ☐ 4. Blue Nile ☐
5. Kordofan ☐ 6. Upper Nile ☐ 7. Darfur ☐
8. B. El Ghazal ☐ 9. Equatoria ☐ 10. Abroad ☐

10. Your nationality is :

1. Sudanese ☐ 2. Other African countries ☐
3. Other Arab countries ☐ 4. Other countries ☐

III. CAREER INFORMATION

1. Did you get any information on the employment possibilities open to you after completing your training, either before or shortly after applying forhigher education in the field in which you were admitted ?

YES ☐ NO ☐

(a) If yes, check the sources of your information :

1. University or faculty employment service office ☐
2. University staff ☐
3. Friends, parents or relatives ☐
4. Guidance counsellors ☐
5. Other students/and union ☐
6. Employment in the field ☐
7. General information sources : books, newspapers, radio,etc. ☐

(b) Do you now feel that the information you got was sufficiently hepful in making the right choice of field ?

Adequate ☐ Inadequate ☐ Somewhat misleading ☐

(c) If you did not receive any career information would you have liked to have received advice on course specialization and its relevance to aptitude, career preference and employment possibilities ?

YES ☐ NO ☐ No opinion ☐

2. When you wanted advice on choosing a field of study for an occupational career :

1. the advice was very satisfactory ☐
2. the advice was not satisfactory ☐
3. those who tried to advise me did not know any better ☐
4. I did not get any advice ☐
5. there was no one to advise me ☐
6. I did not know of any organization that gave advice on career ☐

3. Should the higher education authorities take greater interest in the employment possibilities of their graduates ?

YES ☐ NO ☐ No opinion ☐

If yes, should every institution for higher education :

(i) have an effective employment service bureau with a vocational guidance and counselling services

YES ☐ NO ☐ No opinion ☐

(ii) provide advice on employment opportunities to all students ?

(a) while they apply for admission ☐
(b) in the first year class ☐
(c) later on ☐
(d) final year ☐

(iii) seek the co-operation of the government, industry and business in getting specialists to inform students about careers, employment and manpower requirements

YES ☐ NO ☐ No opinion ☐

(iv) receive the visits of Labour Department Officials every term :

YES ☐ NO ☐ No opinion ☐

4. If proper occupational guidance is made available to you, would you have been willing to change your field of study to one more directly related to an occupation with a better future ?

YES ☐ NO ☐ No opinion ☐

5. The following list gives six means of gaining better knowledge of conditions of work, promotion prospects and suitability to you. Please rank these means in order of preference.

(1. being the best .... 6. the least).

1. Practical job experience during the study course ☐
2. Getting personal information from prospective employers ☐
3. Reading of career publications ☐
4. Discussing with employees in the particular occupations ☐
5. Discussion with parents/friends ☐
6. Consultation with professional bodies ☐

6. To what extent does your choice of career depend on success in your present studies ?

Greatly ☐ somewhat dependent ☐ not dependent ☐

7. (a) where do you expect to be permanently employed when you have completed your education ?

1. Government service ☐ 2. Private sector ☐
3. Others (specify ☐

(b) would you accept a job in the rural area ?

YES ☐ NO ☐

(c) if yes, please check the appropriate reason :

1. rural area needs more people like me ☐
2. opportunity for free life ☐
3. better professional prospects and experience ☐
4. for financial reasons ☐
5. family or social reasons ☐
6. others (specify) ☐

(d) if not, could you please check the appropriate reasons:

1. lack of tap-water, electricity, etc. ☐
2. communication and transportation difficulties ☐
3. separation from friends and relations ☐
4. no scope for your kind of skill ☐
5. rural life is dull and slow ☐
6. no scope for improving competence ☐
7. delays career achievements ☐
8. others (specify) ☐

8. In the following list of some characteristics of careers, indicate the degree of importance of each in your choice of a career by checking the appropriate box.

Factor	Very Imp.	Imp.	Not important
(a) Interesting work	☐	☐	☐
(b) Use of special talents	☐	☐	☐
(c) Use of educational background	☐	☐	☐
(d) Creative work	☐	☐	☐
(e) No supervision	☐	☐	☐
(f) Further studies	☐	☐	☐
(g) Improve competence	☐	☐	☐
(h) Helpful to others and society	☐	☐	☐
(i) Work with people	☐	☐	☐
(j) Good income	☐	☐	☐
(k) Travel	☐	☐	☐
(l) Supervise others	☐	☐	☐

(m) Promotion of career	☐	☐	☐
(n) Secure future	☐	☐	☐
(o) Time for family and hobbies	☐	☐	☐
(p) Social life	☐	☐	☐

9. What do you estimate is the annual income (before taxes) that an average individual specializing in your field expects for a full-time job ?

1. At the start of his career £S ....
2. With about five years of experience: £S ....
3. With about ten years of experience: £S ....
4. Near retirement £S.............

10. If you expect your earnings to differ from the average what do you expect to earn at the following stages of your career ?

1. At the start of your career £S ....
2. With about five years of experience £S ....
3. With about ten years of experience £S ....
4. Near retirement £S ....

11. How do you think earnings in your career will change in the future compared to earnings in similar careers ?

1.more rapidly ☐ 2. at the same rate ☐

3. less rapidly ☐

List of subjects under different fields of study :

Natural Science :

- Biological science
- Premedicine
- Chemistry
- Earth science
- Physics
- Other physical sciences
- Mathematics

Humanities and Arts :

- Arabic
- English and journalism
- Fine arts
- Foreign language
- Philosophy
- Religion

Engineering :

- Chemical
- Civil
- Electrical
- Industrial
- Mechanical
- Mining

Social sciences :

- Economics including Home Economics
- History
- Political science
- Psychology
- Sociology and anthropology
- Geography

Health :

- Pharmacy (nursing for women)
- Medicine

Appendix III

GRADUATE QUESTIONNAIRE

I. ACADEMIC DEGREES

1. Particulars of all academic degrees/diplomas/certificates received after the secondary education .

	Exact name of the degree(s)/ diploma(s)	Subjects taken	Year of admission	Year of graduation	Honours, awards,etc.	Institution from which graduated
1.						
2.						
3.						
4.						

2. If you had any employment while you were studying, please state the duration and type of work.

____

____

II. EMPLOYMENT STATUS

1. Particulars of all paid employment,full-time or part-time, since completing full-time study, training or research.

(Please enter separately each new post where there was either (i) a change of employer, (ii) a substantial, permanent change in the nature of your duties or (iii) a promotion).

	Approximate dates, if possible, give month and year		Employer's business or industry (1)	If **abroad**, please state country
	From	To		
Full/or Part-time (2)	.....	.....	....	....
Full/or Part-time	.....	.....	....	....
Full/or Part-time	.....	.....	....	....
Full/or Part-time	.....	.....	....	....

---

(1) Employer's business or industry, e.g. : Ministry of Public Services and Administrative Reform, University of Khartoum, Textile Industry, etc.

If self-employed, please indicate by writing, partner in a firm of accountants, self-employed author, etc.

(2) Please define part-time by the number of hours per week, or by the number of months in a year.

2. If you have taken any course while you were working, please state the duration and type.

____

3. During, or immediately after the secondary school education, if you had any aspiration for specializing in a particular field, please indicate what it was from the list given in the rows in question (10), page 252.

____

4. **If there was a shift in the choice of a field in the post-secondary education, was it due to :**

1. Financial reasons
2. Family resistance
3. Subsequently received better information on career possibilities
4. Personal reasons
5. Unexpected family circumstances (e.g. death, change of residence, migration)
6. University admission regulations
7. Others (specify)

5. How did you get the first employment after graduation (tick the appropriate medium)

1. The University authorities
2. Labour Department (Employment exchange office)

3. Newspaper advertisement (specify type)
4. Personal contacts with the employers
5. Friends and relations
6. Others (specify)

6. (a) Does the institution you attended last have an employment office? YES / NO

(b) If the answer is in the negative, do you think it would be useful to have one ? YES / NO

7. Reasons for your undertaking post-secondary study or training were : (tick the appropriate box)

1. Need for a particular professional qualification ☐
2. Need for a higher degree for career reasons ☐
3. Desire for more study for its own sake ☐
4. Desire to continue to participate in student life ☐
5. Financial incentives offered by government or non-government agency ☐
6. Lack of employment opportunities for secondary graduates ☐
7. Preference for urban life ☐

8. Source (s) of finance for your post-secondary education (tick the appropriate box) ☐

1. Financed privately through employment ☐
2. Financed by government sources ☐
3. Financed by private sources other than family or self ☐
4. Financed privately by the family ☐
5. Financed by other sources (please specify) ☐

9. Please give your father's occupation at the time of your post-secondary education.

1. Peasant ☐
2. Nomad ☐
3. Merchant ☐
4. Unskilled worker ☐
5. Civil servant ☐
6. Clerical ☐
7. Skilled worker ☐
8. Others (specify) ☐

10. The following table gives the field you have specialized as rows, and the profession you are working in at present as columns. Please tick the box you belong to.

Specialized Field/ /Profession	Natur. Scientist	Engineer	Social Scientist	Human. Professional	Health Professional	Teacher	Busin. and Manag.	Agriculturist	Lawyer	Civil servant (*)	Other
Natural Sciences											
Engineering											
Social Sciences											
Humanities + Arts											
Health (Medicine)											
Education (teacher training)											
Business + Commerce											
Agriculture											
Law											
Administration											
Others											

(*) If you belong to any of the previously mentioned professions, but are also a civil servant, tick both boxes.

11. According to your own opinion, do you think that the education you received in the formal educational system was relevant to the needs of the job and the society ? YES / NO

If yes, indicate the degree of relevance.

Relevant ☐ Fairly relevant ☐ Irrelevant ☐

12. How important were your undergraduate and post-graduate backgrounds as prerequisites for your current job ?

	Undergraduate	Post-graduate degree
Degree in my field a prerequisite for job	___	___
Degree in this or related field a prerequisite for job	___	___
Degree in any field a prerequisite for job	___	___
No degree needed	___	___

Leave post-graduate degree blank, if you do not have one.

13. How long did you have to wait to get the first employment ?

1. less than 6 months ☐
2. more than 6 months but less than one year ☐
3. more than one year ☐

14. Have you changed your occupation between 1967 and 1972 ? YES/NO
If yes, for which of the following reasons ?

1. Better service conditions ☐
2. Better future ☐
3. Better use of training ☐
4. Suits talents ☐
5. Just temporary ☐
6. Lost job ☐
7. Social reasons ☐
8. Others (specify) ☐

15. The following is a list of some aspects of your present job.
Indicate by :

1. the most satisfactory aspect of your job ;
2. the least satisfactory aspect of your job and
3. the most important factor in relation to your career objectives.

a) Interesting work ☐
b) Use special talents ☐
c) Use educational background ☐
d) Creative work ☐
e) No supervision from others ☐
f) Further studies ☐
g) Improve competence ☐
h) Helpful to others and society ☐
i) Work with people ☐
j) Good income ☐
k) Travel ☐
l) Supervise others ☐
m) Better prospects ☐
n) Secure future ☐
o) Time for family and hobbies ☐

16. Would you mind stating your net annual income, first on taking up employment and at the present time.

On taking up employment — At present (mention the month)

£S .... — £S ....

III. EDUCATIONAL SYSTEM

If the Institution you attended for your post-secondary education would ask for your co-operation in improving the performance of its operation, would you be willing to co-operate within your time limits?

	YES	NO
1. as a member of an advisory group	☐	☐
2. filling out some questionnaires from time to time	☐	☐
3. attending some of the meetings	☐	☐

IV. PERSONAL INFORMATION

1. Name of respondent : ______________________________

2. Parents' home address : ____________________________

____

3. Present address : ________________________________

____

4. Age : ________

Signature : ____________ Date : ______________

Appendix IV

EMPLOYER QUESTIONNAIRE

I. BACKGROUND INFORMATION

1. Name of the firm/organization : ______________________________
____

2. Date of establishment : ____________________

3. Type of control : Government ☐
Government undertaking but autonomous ☐
Semi-government ☐
Private ☐

4. Number of employees : (i) Full time ________
(ii) Part-time (1) ________

5. Number of employees having post-secondary education ______

6. Number of :

	Sudanese	Expa-triates	Total	Vacant posts
(i) administrators and professional				
(ii) sub-professional and technical				
(iii) workers				

7. List the products produced and/or services offered by your firm/organization

Products	Services
______________________	______________________
______________________	______________________
______________________	______________________

If it is an educational institution or a school, list service as teaching mentioning the streams taught ; if it is a college, types of diplomas/degrees offered.

---

(1) Please define part-time.

If it is a government department, mention the types of responsibilities of the department under the services.

If it is an industrial firm, mention the type of products you produce and services, if any, you offer, such as consultancy in particular fields.

II. RECRUITMENT METHODS

1. (a) How do you recruit employees specially with post-secondary education ? Check the appropriate medium :

(i) **Institution authorities** ☐
(ii) **Labour Department** ☐
(iii) Newspaper advertisement ☐
(iv) Personal contacts with the employees ☐
(v) Friends and relations of employees ☐
(vi) Others (please specify) ☐

(b) If you have any of the following criteria for selection of the employees with post-secondary education, please tick the appropriate box according to the degree of importance of the criterion.

	Very important	Important	Unimportant
(i) academic record	☐	☐	☐
(ii) aptitude tests	☐	☐	☐
(iii) interview	☐	☐	☐
(iv) past experience in similar type of job	☐	☐	☐
(v) letters of recommendation	☐	☐	☐
(vi) physical appearance	☐	☐	☐
(vii) others(specify)	☐	☐	☐

2. Is there a mechanism to decide on what kind of graduates you would need for a specific job ?

YES / NO

a) If yes, does it function ; satisfactorily ☐
or need a change ☐

b) If not, do you think that a mechanism, which would establish the coherence between the job description and the kind of education offered by the educational institutions would be useful and profitable for the firm to decide on the right kind of graduates for a specific type of job ?

YES / NO

3. What are the difficulties in describing a job to make the right recruitment ?

a) No coherence between the educational institution and the employers' needs ☐

b) **The graduates do not have the training they are supposed to have** ☐

c) Better performance in the academic life does not mean better performance at job ☐

d) Type of job is too complex to allow for precise specification of educational degree needed ☐

e) Type of training at the educational institutions is not sufficient for the skill needed at the job ☐

f) Others (specify) ☐

III. EDUCATION AND EMPLOYMENT

1. **We would like to have your opinion in respect to the educational background of an employee and his job performance :**

a) a very high degree of correspondence between academic performance and job performance ☐

b) a medium degree of correspondence between academic performance and job performance ☐

c) no correspondence between academic performance and job performance ☐

2. Do you have any provision for in-service training facilities for employees having post-secondary diplomas in your firm/organization?

YES / NO

(a) If the answer is in the affirmative and the training is held in the academic institutions away from your firm/organization, please tick the appropriate box for the type of such training and indicate the duration of the training against it.

		Duration
1. staff fully away from your firm	☐	______
2. staff three-quarter time in your firm/organization and one-quarter time away	☐	______
3. staff half-time in your firm/organization and half-time away	☐	______
4. staff one-quarter time in your firm/organization and three-quarter time away	☐	______
5. **abroad**	☐	______

Would you kindly mention for what type of personnel (see question 6, section I), you have such provision ?

____

Is it meant for upgrading personnel ? ☐

or for meeting special requirements of the firm/organization ☐

If the in-service training is held in your firm/organization, please write in a few lines the duration of such training for different kinds of personnel, organization and objects of such training.

____

____

____

(b) If you do not have in-service training for your personnel, would you like to have such training programme introduced in your firm/organization in the future ? YES / NO

3. Are you willing to co-operate with the institutions of higher education in the development of such courses in the following ways :

(i) as member of the curriculum committee	YES / NO
(ii) as participant in the teaching activities programme	YES / NO
(iii) in filling out questionnaires from time to time	YES / NO
(iv) in evaluating the training programme	YES / NO
(v) by sending your staff for such courses	YES / NO

4. Would you like to see that the institutions of higher education be more concerned about the employers' needs in

(i) formulating their curriculum	YES / NO
(ii) choosing the method of instruction	YES / NO
(iii) general development of the training programme	YES / NO

5. Is your firm interested in special courses for Industry/business, etc. at the institutes of higher education ? YES / NO

If yes, could you specify what kind of courses you would like to see developed.

____

6. Are you prepared to assist institutes of higher education in

(i) developing their curriculum	YES// NO
(ii) suggesting methods of instruction	YES / NO
(iii) evaluating their training programmes	YES / NO
(iv) developing research projects related to your firm	YES / NO

7. Do you accept college-based 'sandwich' students ?(1)

YES / NO / may accept in the future

Do you have 'sandwich' students in your organization ?

YES / NO / may have in the future

Do you have any industrial projects for students ?

YES / NO / may have in the future

8. Forecast of needs

Could you please give the number of employees you had in 1968 and 72 with different fields of specialization and the expected numbers you would need of the same in 1976 and in 1980. Please apply your own judgement in respect of the growth of your firm during the next 8 years.

Fields of specialization	No. of employees in 1968	1972	No. of employees needed in 1976	1980
Natural Sciences				
Engineering				
Social Sciences				
Humanities + Arts				
Health(Medicine)				
Education				
Business + Commerce				
Agriculture				
Law				
Administration				
Others				

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(1) Students who attend 'sandwich' courses - courses which involve alternate periods in industry and an academic institution.

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The book

The rapid expansion of higher education in the Sudan during the last decade has created many quantitative and qualitative imbalances. These imbalances have manifested themselves in the unemployment of graduates in some fields of studies and scarcity in some other fields. They are also reflected in the mismatch between the type of training being offered in the higher education system and that needed by the labour market. The present study attempts to identify the factors responsible for such imbalances through a quantitative and qualitative analysis of the situation, and suggests measures to correct the imbalances.

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